INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA
Reg. United States Pat. Off. Reg. United Kingdom.
Published on the 1st of each month by
THE INDIA RUBBER PUBLISHING CO.
No. 25 West 45th Street, New York.
Telephone—Bryant 2576.
CABLE ADDRESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, F.R.G.S., Editor

Vol. 60. JUNE 1, 1919. No. 3.

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft. Post Office or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

DISCONTINUANCES: Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

TABLE OF CONTENTS ON LAST PAGE OF READING.

RUBBER MANUFACTURERS' OPINIONS.

THE RESULTS of a canvass of the membership of the National Association of Manufacturers—4,400 large firms engaged in practically every line of industry—with respect to business conditions and probabilities have just been compiled and individual opinions quoted regarding what is needed to promote general prosperity. Five out of 22 principal groups of industries throughout the United States are all that agree that business activity is more than between 25 and 50 per cent of normal. One of these is the rubber industry.

The five divisions of industry reporting a predominating condition of present business prosperity are the jewelry and silverware, musical instruments and vehicle groups (the last mentioned including automobile manufacture), rubber and tobacco. With the exception of these five, the manufacturers in general do not view the trade probabilities for the balance of 1919 as very bright. The views of the rubber manufacturers are here presented. On present trade conditions 19 per cent of rubber men report them poor; 19 per cent report fair; 42 per cent, good; and 20 per cent, excellent. Of the trade prospects for 1919, 5 per cent of the rubber men report them poor; 15 per cent report fair; 57 per cent, good, and 23 per cent find them excellent.

Conditions of manufactured stocks on hand with retailers (or jobbers) compared with normal pre-war supply:

Rubber and manufacturers report: low, 52 per cent; normal, 32 per cent; and over, 16 per cent.

Are consumers and retailers (or jobbers) buying on any important scale? Rubber manufacturers report: 54 per cent, yes; 46 per cent, no.

Are domestic markets of more immediate attraction than foreign?

Of rubber manufacturers, 76 report that they are, 24 per cent that they are not.

One hundred per cent of rubber manufacturers are recorded as opposed to government ownership of public utilities. On the question of private ownership under government regulation 75 per cent of rubber manufacturers report that they favor it, and 25 per cent are against it.

On the question "Do manufacturers favor legalized (Federal statute) fixed resale prices on trade-marked articles?" 48 per cent of rubber manufacturers favor it and 52 per cent are against it.

On the question of a referendum on the proposed legally vested National Labor Board to adjudicate disputes, 76 per cent of rubber dealers and manufacturers favor it while 24 per cent are against it.

Ninety three per cent of rubber dealers and manufacturers report themselves in favor of the repeal of the La Follette Seamen's Law and 7 per cent are against it.

The question "Should statutory responsibility be imposed on trade unions?" shows that but one per cent of the rubber industry is against it, while 99 per cent declare in favor of it.

THE COMING INDUSTRIAL CONGRESS.

IMMEDIATELY after the return of President Wilson from Paris, an industrial congress to bring about an amicable program between capital, labor and the Government for the readjustment of industry is to be called. About 100 persons will be invited to the conference, which will include some of the biggest employers of labor such as Charles M. Schwab, John D. Rockefeller, Jr., Henry Ford, and J. Ogden Armour, with labor representatives such as Samuel Gompers, W. D. Mahon, John Fitzpatrick, and Austin B. Garretson. Men and women from other walks of life, former President Taft, Justices Brandeis and Holmes, Archbishop Hayes, Professor Ripley of Harvard and others are also expected. Such a conference should be able to do much to improve industrial conditions and agree upon a course which will result in a good accord between labor and capital. It is understood the con-

gress will reaffirm the authority of the War Labor Board as a cooperative tribunal of justice until the conference conclusions are put in effect. The congress may be held in either New York or Chicago and its proceedings will be viewed with the greatest interest, particularly if President Wilson brings back from his extended stay in Europe some timely suggestions regarding the best methods of meeting the changed conditions in the industrial world.

RESULTS OF GOVERNMENT OWNERSHIP.

AUSTRALIA'S experiments with government-owned factories will be regarded with interest in the United States which has a number of government-owned factories of its own. That Mecca of the labor agitator, the Antipodes, which has tried every experiment that offered any novelty savoring of confiscation or paternalism, has of course gone deeply into government ownership and the report of the United States commercial attaché at Melbourne is therefore interesting.

Since 1912, Australia has owned and operated a clothing, cordite, harness and saddlery, woolen fabrics and small arms factories. An acetate of lime plant is being added, which will be subsidiary to the cordite factory. The total output of the factories since their establishment has been $13,997,225, while the total cost of operating has been $13,786,075, which includes depreciation of plant and buildings and interest on a capital investment amounting to $2,392,950. A royal commission which investigated the operation of these factories congratulated the defense department upon the efficiency of their work.

There is, however, another side not generally known. The labor unionists of Australia are distinctly in the saddle, as witness the defeat of conscription during the war. William Hughes, the commonwealth prime minister, has already been repudiated by the labor-union party because he believed in conscription. The Union party is just now frankly syndicalistic and boldly expresses its admiration for the Bolshevistic government of Russia. The one great tenet of this party just now is repudiation of the public debt. Taxation is top-heavy, and the commonwealth Parliament exacts an income tax graduated from $500 a year up, while the state also exacts 28 cents on every $4.80 above $800 a year. All government enterprises are financed with money generally borrowed from Great Britain, sometimes at 5½ per cent interest. The mortgage on the future is growing day by day, and the plan of the Union party to solve it is by repudiation.

Private enterprise in Australia and cooperative citizenship enterprises are practically nil. During the war the laborites deliberately followed a "go slow" policy. The capacity of a man in the shipyards was 98 rivets a day, and the average 73. A machine could set 600, but the employers dared not install them for fear of a strike. Strikes are frequent for every cause and no cause. Of course there is a compulsory arbitration system and the members of the arbitration board are kept working over time. There are hundreds of thousands of acres awaiting development in Australia and but 5,000,000 people. The opportunity for well-directed capital is abundant, but with the present government it is hardly likely to go there. Americans who advocate government ownership and the rule of labor should ponder Australia's plight before urging their own country to embark upon this same calamitous career.

HOMES FOR EMPLOYES.

"THE NATION is short of homes." "Stimulate the revival of private building." "Start a local 'Own Your Own Home' Campaign."

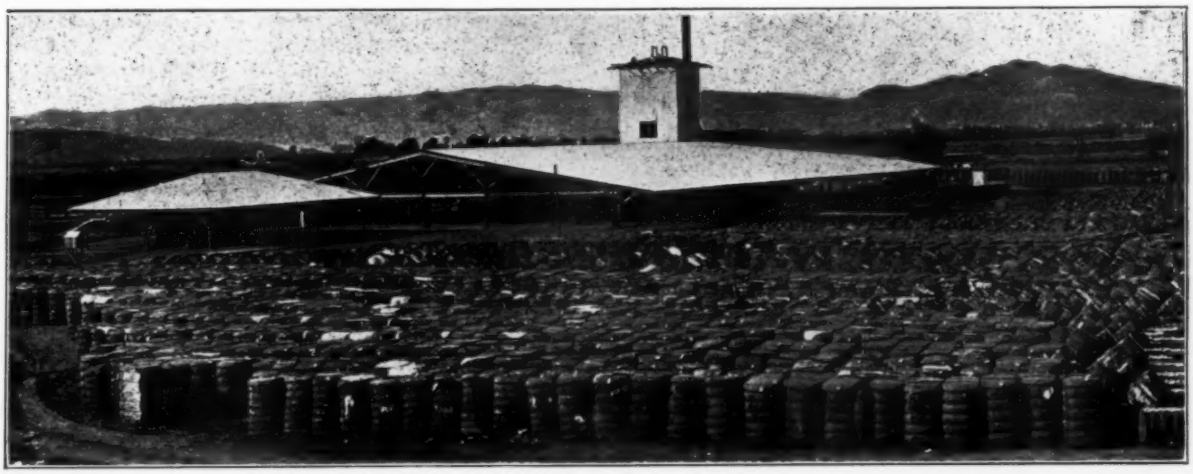
This is the gist of most timely advice given to the governors and mayors at the recent Washington conference by Ernest T. Trigg, president of the National Federation of Construction Industries, as the most logical and sound way of stimulating business and absorbing labor. The campaign has been promulgated by the United States Department of Labor and it is urged upon manufacturers and the heads of great industrial establishments as a means of hastening the return of normal peace conditions and general prosperity.

It was pointed out that "home owning to-day pays the same ratio of that type of returns that it did before the war, and that every home that is built immediately stimulates business locally, and creates the demand for materials and products in more than a hundred correlated industries." Mr. Trigg's division is prepared to furnish definite plans of organization, suggestions for a publicity campaign, and if occasion demands, send an expert to a community to advise.

Rubber manufacturers have already done much in this line and will doubtless do more.

"WILL WE BOYCOTT GERMANY?" IS ASKED AND answered by magazine writers of many sorts. Actually the answer is, "We have." Not officially, of course, but individually, quietly and determinedly. As a sign of this, note in the erstwhile American-German restaurants, frankfurters are now Liberty sausages; in the department stores rubber toys "Made in Germany" are no longer displayed, but are relegated to the "unsalable" section. This will not continue forever, nor should it; that is up to the Germans themselves. Instead of smug self-satisfaction, continued propaganda, and hypocritical expressions of esteem for us and ours, they should face the music, acknowledge their crimes, repent and make full restitution

Growing Cotton for Tire Fabrics.



COTTON READY FOR SHIPMENT IN SAN JOAQUIN VALLEY.

ARIZONA'S cotton-planting challenge issued seven years ago when a few far-sighted men started the bolls a-growing, has been echoed by California, where the industry has progressed far beyond the infant stage. The characteristic energy and enterprise of the westerner have overcome all obstacles and the returns have been phenomenal in some cases and gratifying in all.

In the Salt River valley in Arizona 34,000 bales of cotton were produced in 1918, valued at $12,000,000, while 85,000 acres have been planted for the 1919 crop. Not only are the farmers assured of golden returns for their labors, but the quality of the product is of the very highest. The eastern markets are awakening to the fact that American Egyptian cotton compares favorably with either the genuine Egyptian Sakellarides or Sea Island. It is said that the yield of Sea Island is steadily decreasing, the total amount estimated for this year being but 40,000 bales on an acreage of a quarter of a million. The boll weevil is said to be the chief cause of the falling off.

LONG-STAPLE COTTON FIELD IN SALT RIVER VALLEY.

The cotton planters of Arizona point with pride to the fact that there is a distinct increase in the length of the staple this season as the result of careful seed selection under government inspection. Ninety-eight per cent of the crop grown shows a length of fiber of 1⅝ inches or better with 81 per cent showing 1-11/16 inches or better. The quality of Arizona Pima cotton has been demonstrated in the manufacture of tire fabrics and a constantly increasing demand is predicted. It is further declared that government tests in the aircraft program developed the fact that the Pima variety is exceptionally desirable for use in fine fabrics, owing to its comparatively small waste, high quality, uniformity of run and unusual length of fiber. As to the prices brought it is interesting to note that recently an equivalent grade of old-world Egyptian cotton sold at Providence, Rhode Island, at 60 cents.

A little concerning the history of the successful Arizona experiment is worthy of note. Although in the early 'seventies Judge C. H. Gray brought some cotton seed from Georgia and tried it out in Phoenix, where it was regarded as more or less of a curiosity, it was not until 1910 that an actual beginning was made with the Pima variety. This was developed at the experimental farm at Sacaton by the United States Department of Agriculture. This new variety was produced at an average of 1½ inches in staple length, and was raised in commercial quantities in 1912, when some 280 bales were put on the market; in 1913 there were 2,200 bales; in 1914, 6,187 bales; in 1915, 1,095 bales; in 1916, 3,331 bales, and in 1917, 15,966 bales.

The industry is now far past the experimental stage and is progressing toward its flood tide. The Pima variety has now almost entirely superseded the original Yuma. It is carefully segregated throughout its growing and ginning to avoid contamination by inferior grades, thus furnishing pure, select seed, from which the record crop for this year is expected. The war for a time laid a heavy hand on the cotton industry, bringing to the front the inferior grades; this handicap no longer exists and new fields are being planted everywhere.

The average yield of cotton in Arizona has been about half a bale to the acre but some farmers recently have done much better, it is said. It has been demonstrated that new lands are not as good for cotton as the older lands on which there has been

ARIZONA LONG-STAPLE COTTON.

alfalfa or Bermuda. Overirrigation has been responsible for more poor yields than lack of water. Rotation of crops has been found to be efficacious in increasing the yield, preferably every three years, when alfalfa is produced. There have been serious delays in the ginning, caused by lack of machinery, ordered but not received in time. Some of the gins have been doubled in capacity and have been kept working at top speed. The picking for this year was about completed in March, according to the latest figures from Phoenix.

While cotton is most valuable for its use in staple manufactured goods, its utility in by-products is worthy of attention. After having gone through the gin, and a certain percentage has been disposed of for seed and the remainder crushed for oil, its mission in life is by no means ended. From the seed are obtained linters, hulls and the meats or kernels proper. The linter is merely the layer of short lint which thoroughly covers the seed pod. It may be used for upholstery, absorbent cotton, felt, cellulose, twine, gun-cotton, writing paper, varnishes, etc. The hulls are used in bran, fertilizer, fuel, packing material, fiber, stuffing for horse collars, bases for explosives and pressed paper products.

The usefulness of the meats or kernels of the cotton seed naturally exceeds that of the linters and the hulls. Two products are made from the kernels, cake or meal and crude oil. The first product finds its usefulness in dyestuffs, fertilizers, flours and in an unusually well-balanced feed for cattle and other stock. The crude oil goes through several refining processes, yielding oils of various qualities, many of which are useful as foods. The so-called foots, produced from the crude oil, are used in washing powders, soaps, glycerine, candle pitch, composition roofing, linoleums, insulating material, oilcloth, waterproofing, artificial leather and phonograph records.

California claims to be far ahead of Arizona in acreage and general expectations. It is declared that the following figures show what is to be expected from California: Imperial valley, 142,000 acres; San Joaquin valley, 35,000 acres; Palo Verde valley, 23,000 acres; Bard district, 1,000 acres; miscellaneous areas, 1,000 acres. The farmers of the San Joaquin valley are especially enthusiastic over the outlook this year and are planning to increase their acreage greatly. There is some conflict of opinion in this district as to the best varieties to plant, it is said. Efforts to exclude by legislation all varieties of cotton except Pima or Yuma Egyptian strains have not been entirely successful. Some growers who preferred the short staple have made a successful effort to have their way. It is said the first experiment in raising cotton in the San Joaquin was made 35 years ago. There was a considerable acreage also in the early 'eighties when a large force of men was employed to gather it. A strike over some minor matter took place, and the superintendent, a man of choleric disposition, rather than yield or compromise with the strikers, set the field on fire, thus ending for the time being what might have developed into a big industry.

Favorable factors in prognosticating returns from cotton raising this year are: (1) decrease in cotton production as a whole, both in the United States and elsewhere in the last few years; (2) increase in the number of cotton spindles in the United States and England; (3) new uses for cotton and cottonseed products.

Limiting factors in normal cotton consumption are (1) time needed to restore the wrecked mills of Belgium and France, and to reorganize the cotton-spinning industries of Germany and Austria; and (2) time for the impoverished peoples of Europe to recover their normal buying power. Prices, because of the fact that cotton is a basic commodity, probably will not be lowered appreciably except in proportion to labor and living costs.

The estimate of the Department of Agriculture is a carry-over of 3,000,000 bales, about as much as there was last year. The growers express the greatest faith in the recuperative powers of mankind and declare that the world will actually need more than the United States will have to sell this year.

PIMA COTTON IN ARIZONA.

Edward F. Parker, vice-president of the Southwest Cotton Co., Phoenix, Arizona, states that there will be about 350,000 acres under cultivation in the Salt River valley this year. Of this total about 80,000 acres will be in Pima cotton, some 10,000 acres belonging to the Southwest company.

It has been found impractical to grow this grade of cotton on all of the irrigated land of this valley because some of the land is not suited to the crop. In order to compete successfully with Egypt and other sources of cotton of similar quality, it is desirable to rotate with alfalfa and keep the land in the best possible condition so that it will yield to maximum capacity. It costs no more, and often less, to grow a large crop on a small acreage than to grow a small crop on a large acreage. The real profit is in the yield which is in excess of the average.

Mr. Parker has recently been made president of the Salt River Valley Hotel Co., Phoenix, Arizona, which is planning the erection of a handsome tourist hotel to be called "The Arizona." Associated with him in the enterprise are a number of important business men in Phoenix.

REDMANOL.

Redmanol is a synthetic resin or amber made of phenol and anhydrous hexamethylene-tetramine, possessing unusually high dielectric strength, exceptional heat-resisting qualities, brilliancy and luster, and great chemical inertness. With the proper fillers it withstands a temperature of 500 degrees F. in the air, and 650 degrees F. in live steam or boiling oil, without changing its shape or characteristics of chemical inertness. It may be used in making the type of articles known as condensation products.

Echoes of The Great War.

EXCISE TAXES ON RUBBER GOODS.

UNDER the last War Revenue Act passed by Congress and approved February 24, 1919, the following excise taxes on rubber manufacturers are now in effect. They apply to articles sold or leased by the manufacturer, producer or importer, the tax specified being a percentage of the price for which so sold or leased:

Automobile trucks and automobile wagons (including tires, inner tubes, parts and accessories therefor, sold on or in connection therewith or with the sale thereof), 3 per centum.

Other automobiles and motorcycles (including tires, inner tubes, parts, and accessories therefor, sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum.

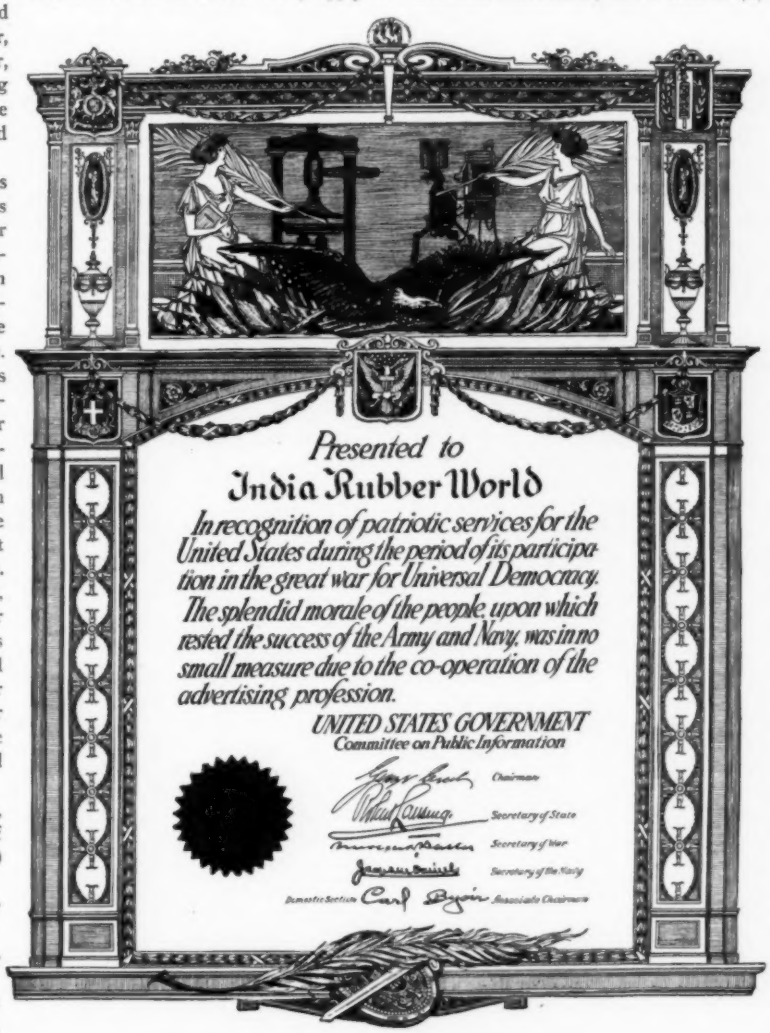
Tires, inner tubes, parts or accessories, for any of the articles enumerated above, sold to any person other than a manufacturer or producer of any of the articles enumerated above, 5 per centum.

Baseball protectors, foot-balls, tennis, golf and lacrosse balls, 10 per centum.

Chewing gum, 3 per centum.

THE VICTORY LIBERTY LOAN.

According to the final official figures, subscriptions to the Victory Liberty Loan amounted to $5,249,908,000, an oversubscription of $749,908,300, or 16.66 per cent over the quota of $4,500,000,000. The work lagged somewhat during the early days of the drive, but there was never any real doubt that the American people would respond generously to "finish the job right." Up to the last day only 85.54 per cent of the total had been tabulated, yet the last-day avalanche from coast to coast swept the country over the top, with colors flying, and Treasury officials had prophesied that the final figures would go very close to $6,000,000,000. Only $4,500,000,000 will be accepted, however. New York district totaled $1,762,684,900, exceeding by $112,684,900 the estimate of the managers that it would exceed its quota by $200,000,000, and most of the other great cities of the country went over the top.


Presented to
India Rubber World
In recognition of patriotic services for the United States during the period of its participation in the great war for Universal Democracy. The splendid morale of the people upon which rested the success of the Army and Navy, was in no small measure due to the co-operation of the advertising profession.
UNITED STATES GOVERNMENT
Committee on Public Information
Chairman
Secretary of State
Secretary of War
Secretary of the Navy
Domestic Section
Associate Chairman

GOVERNMENTAL APPRECIATION.

THE DRIVE IN GREATER NEW YORK.

Committees representing the various branches of the rubber industry in Greater New York solicited the trade with thoroughness and enthusiasm, and a total of $5, 911,500 was subscribed by the various divisions of the Central Committee as follows:

Crude rubber	$1,171,600
Tires	2,188,650
Boots and shoes	734,100
Medical rubber goods	101,700
Mechanical rubber goods	1,161,050
Reclaimed rubber	55,000
Hard rubber	354,700
Publicity	11,200
Brooklyn direct	133,550
	$5,911,550

The Crude Rubber and Publicity Divisions are to be especially congratulated for the fact that they went over the top by about 65 and 60 per cent, respectively.

THE RESULT IN MASSACHUSETTS.

In Massachusetts 65 rubber firms and their employes subscribed $2,648,075 and returns have not yet been received from many important concerns. Most of the larger companies reached their quota and some exceeded it.

The enthusiasm of the employes of The Fisk Rubber Co., Chicopee Falls, was particularly notable. In twelve hours they had exceeded their quota, total subscriptions at the end of the first day being $300,000. At the close of the fifth day the final total of $450,350 had been reached, making $1,569,250 subscribed in the five loans.

The Boston Federal Reserve District went over the top in the Victory Liberty Loan drive by more than fifty millions of dollars. Subscriptions to the Fifth Loan amounted to $425,159,950, an oversubscription of $50,159,950, or 13.38 per cent over the quota of $375,000,000. The Boston district finished third, New York being first and Chicago second. The estimated number of subscribers for Boston was 817,822.

A list of subscriptions by firms, including all from whom returns have been received, follows:

FIFTH LIBERTY LOAN SUBSCRIPTIONS OF THE RUBBER INDUSTRY OF MASSACHUSETTS.

EMPLOYES AND COMPANY SUBSCRIPTIONS COMBINED.

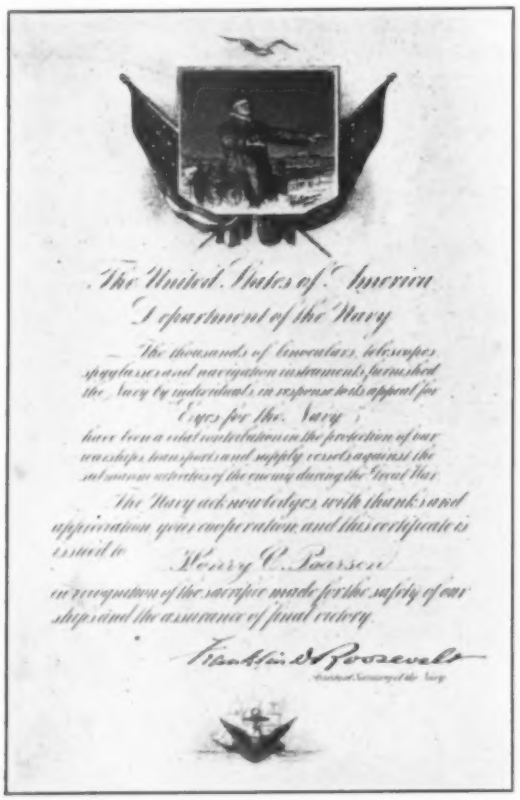
Acushnet Process Co.	$12,950	Converse Rubber Shoe Co.	48,100	Lowell Insulated Wire Co.	20,300
Aetna Rubber Co.	200	Dryden Rubber Co.	50,000	Mayo Co., Wm. F.	11,800
Ajax Rubber Co.	6,500	Eastern Rubber Co.	500	Meade Rubber Co.	8,200
Akron Tire & Rubber Co.	300	Easthampton Rubber Thread Co.	79,750	Monnier, Ernest	8,200
American Rubber Co.	47,000	Elastic Tip Co.	1,500	Monnier, Ernest	1,000
Appleton & Son, F. H.	11,475	Empire Rubber & Tire Corp.	800	Mutty Co., L. J.	20,000
Apsley Rubber Co.	10,500	Everlastik, Inc.	50,000	National Metal & Rubber Co.	5,000
Archer Rubber Co.	10,000	Feinberg Co., David	5,500	Needham Tire Co.	12,700
Archer-Strauss Rubber Co.	10,000	Firestone Tire & Rubber Co.	22,500	New York Belting & Packing Co.	20,000
Atlantic Rubber Co.	600	Fisk Rubber Co., The	1,295,350	Para Rubber Co.	500
Avon Sole Co.	1,250	Franklin Rubber Co.	2,000	Reading Rubber Manufacturing Co.	30,650
Back Bay Tire Co.	500	Garlock Packing Co.	300	Republic Rubber Co.	5,000
Bailey & Co., C. J.	850	Globe Rubber Works	1,100	Revere Rubber Co.	20,800
Boston Blacking Co.	15,000	Goodrich Rubber Co., The B. F.	2,300	Sanford Mills	1,050
Boston Rubber Shoe Co.	96,000	Gutta Percha & Rubber Mfg. Co.	6,100	Standard Woven Fabrics Co.	6,000
Boston Woven Hose & Rubber Co.	100,000	Hauthaway & Sons, Inc., C. L.	4,650	Stoughton Rubber Co.	8,850
Brock Rubber Co., A. S.	100	Hood Rubber Co.	405,650	United States Rubber Co., Boston	52,050
Cambridge Rubber Co.	7,800	Howe, liver OR	50	United States Rubber Co., New England	20,000
Carr Co., F. S.	12,000	Jacoby, Ernest	5,000	United States Rubber Co., Springfield.	6,700
Clapp Rubber Co., E. W.	16,650	Kenlit Rubber Co.	450	Wood Elastic Webbing Co., J. W.	6,850
Clifton Manufacturing Co.	25,000	Killion Rubber Co.	1,250		
Colton Elastic Webbing Co., George S.	10,150	Lawrence Rubber Co.	400		
Conant-Houghton Co.	8,750	Lewis, Tracy S.	3,000	Total	$2,648,075

RECONSTRUCTION INFORMATION.

The United States Council of National Defense has placed at the command of the business world the information contained in the voluminous collection of data brought together, classified, indexed and partly digested by the Reconstruction Research Division. It also offers the services of the division in the procurement of such special information as may be desired and which may aid in the reorganization of industry and the resumption of trade, or which in any other manner may promote progress in reconstruction.

It will chart all information received from state, county and community organizations, keeping a digest of state reconstruction news. It has access to every important report of foreign reconstruction activity, proposed or accomplished. Having at its disposal reports from all war administration boards, bureaus and commissions, it can supply valuable information as to domestic price data and production estimates, wage data, labor supply reports, foreign prospects, credit outlook, and price tendencies which will be invaluable to the manufacturer and business man. A vast amount of material from clipping agencies having a bearing upon any phase of reconstruction is instantly available, classified, indexed, and ready for reference.

In thus proposing to extend its service the council opens to the business public probably the largest and most complete assembly of up-to-the-minute reconstruction information in existence. Inquiries may be made by written communication, by telephone, or by personal representative. Requests should be addressed to the Reconstruction Research Division, Council of National Defense, 18th and D streets, N. W., Washington, D. C.



FOR SUPPLYING "EYES FOR THE NAVY."

LOUIS BIRKENSTEIN IN CHARGE OF SURPLUS WAR PROPERTY.

Announcement has been made by the War Department of the promotion of Louis Birkenstein to the position of Chief of the Surplus Property Division, Office of the Director of Storage. Before the war, Mr. Birkenstein was head of S. Birkenstein & Sons, scrap rubber dealers, Chicago and New York. On proffering his services to the Government, he was appointed head of the Waste Materials Branch of the Salvage Division of the Quartermaster's Department, where he has acted as civilian expert and won the esteem of his associates through his ability, integrity, and patriotism. His new duty will be to dispose of the surplus of various articles acquired by the War Department.

BRITISH IMPORT RESTRICTIONS MODIFIED.

All restrictions upon the importation of rubber manufacture other than tires, except boots and shoes and stationers' sundries, have been removed, and these may now be imported freely under general license. Rubber tires and boots and shoes are now admitted under license up to 50 per cent of the 1913 imports. No rations have been set for stationers' sundries.

TESTING MATERIALS MEETING.

The American Society for Testing Materials will hold its annual meeting at the Hotel Traymore, Atlantic City, New Jersey, from June 24 to June 27. The sixth session, to be held June 26, will include the report of Committee D-11 on "Rubber Products," E. A. Barrier, chairman; "Steam Hose for Car Heating," H. J. Force; report of Committee D-13 on "Textile Materials," G. B. Haven, chairman, and report of Committee E-1, on "Methods of Testing," G. Lanza, chairman.

WATERPROOFED APPAREL IN GREAT BRITAIN.

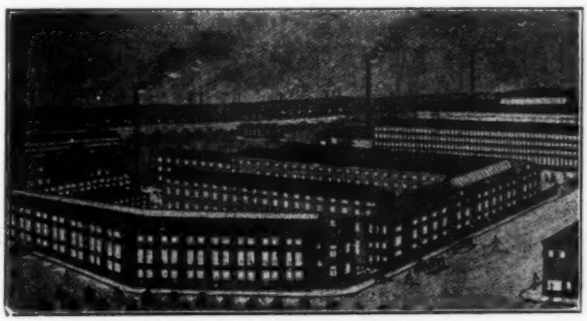
Statistics for the six years 1913 to 1918, inclusive, show a large decrease in Great Britain's imports of waterproofed apparel during the last year. The figures are the following: 1913—$31,544; 1914—$41,151; 1915—$26,162; 1916—$46,319; 1917—$44,027; 1918—$10,763.

An Investigation of German Ravages in Rubber Factories of Belgium and Northern France During the Great War.

Special Correspondence.

THE will to conquer new markets by force played a rôle in Germany's aggression that is daily being put in a clearer light by substantial documents. In February, 1916, the German staff instituted a detailed and thorough study of the French and Belgian industries in the occupied districts. It was a very close inventory of more than 5,000 factories, for which were employed 200 experts specially recalled from the front for the purpose, out of the ranks of the combatant army.

What thought moved the German Staff to undertake and bring to a successful issue this comprehensive task? Was it a question of drawing up a list of the resources which, in case of a prolongation of the struggle, the supplies and the industries of the occupied regions would still be able to furnish? The date at which this work was executed, the certainty of victory that inspired the Hun High Command at the time, exclude this hypothesis. The end pursued was quite different, and if the facts of the case are examined with any logic, the aim will immediately stand revealed with startling clearness.



PLANT OF ENGLEBERT & CIE.

Starting with the principle that a thorough knowledge of the industrial and economic conditions of the occupied territory was necessary in influential circles in the German Empire, an attempt was made in this study to furnish a description as complete as possible; this has been gathered from statements made and information gained on the spot. This work covers the most important industrial branches, from a technical as well as from an economic point of view. It describes the conditions under which the various industries exist; it exposes their relations with Germany and with the markets of the world; it gives, furthermore, a summary of the repercussions that will probably result for Germany from the destruction of certain branches of these industries.

OSCAR ENGLEBERT.

All things duly considered, this formidable survey had no other end to serve. Each of its chapters is devoted to one of the industries of the invaded countries, and each industry there is examined from the following triple point of view:

1—Its position at the time of the invasion.

2—Its position resulting from the damages sustained, at the time of the investigation.

3—The profit that the German industry could derive from its disappearance and from the destruction of its factories.

The damage found by the experts of the great German Staff are divided into two classes and placed under the following headings:

1—Damages caused directly by the operations of war.

2—Damages resulting from the proceedings of the German authorities.

This statement, which in reality constitutes an avowal signed by the hand of the thieves themselves, is limited to the zone occupied by the German armies and was effected in February, 1916; consequently, it does not relate the total damage sustained by the French establishments, for the victory of the Marne had already forced the enemy to retreat.

Now, immediately behind the French front there was a whole series of flourishing industrial towns before the war, whose factories must now be considered as having been absolutely destroyed. Such is the case of Rheims, Armentières, Béthune, Lunéville, Verdun, Dunkirk, and many other points. This reservation has, moreover, been well made, "for in order to estimate the whole damage," adds the German document above considered, "the data of this inquiry should be amplified by figures which it will not be possible to fix until after the end of the campaign." Thus from each page of this "confidential" work, truly stupefying in its cynicism, glares the constant concern to destroy methodically and deliberately every industry capable of competing in the slightest degree with the German industry; and the conviction proudly proclaimed of thus aiding in the development and prosperity of Germany is displayed on each page.

In a chapter devoted to coal mines, for instance, the authors of the "confidential" report estimate the losses that France will suffer, at 13 million tons for the first year and 10 million tons for the succeeding years, since Lens, Liéven and Meurchain had been rendered inexploitable. "When they shall have been put in good condition again," says the German document, "the coke ovens of the Lens company will for years be obliged to import their supply of coals for coke, since there will be no bituminous coal from their own mines, because of the destruction of the works and the flooding of the mine." The establishments thus attacked comprise 554 ovens with an annual production of 620,000 tons of coke.

The weaving industry, which in many respects is so intimately related to the rubber industry, has not been spared, either. Still quoting from the admission of the German experts, it will take two years to restore the 1,900 weaving establishments of Lomme, Haubourdin, Comines, Wervick, Perrenchies, Deulemont, Provins, and one year for 1,400 others. And the German investigators dwell on this situation, showing all the benefit that the German industry will derive therefrom. "In order to be able to take advantage," says their report, "of the terrible blow sustained by the industries in the occupied regions, it is of particular interest to Germany to set her intact mills working as soon as possible, immediately after the war is ended. An outlet of enormous importance is certain to open for them in France"!

"As for the rubber industry," finally says the report, "it will

certainly take some years after the war to procure the necessary rolling-mills, calenders, and special machines and tools, and the despoiled factories will certainly lose many of their customers. Let us know how to profit by this circumstance."

The avowal is significant, and this document, fallen into French hands at the time of the defeat of the Germans, and brought before the Allied Council by the French Minister of Finance, M. Klotz, shows, without further discussion, that one of the principal objects of the German campaign was nothing but the destruction of French and Belgian industry, to the advantage of German industry. This is just what the French Prime Minister, M. Clémenceau, crushingly summed up when he said during an interview accorded the American press: "that the war launched by Germany and brought by her into the invaded territories, in the pillage and destruction, was a thorough and well-calculated conspiracy with the view of exterminating France industrially and commercially as well as militarily."

EDOUARD BUNGÉ.

This inventory ordered by the German Staff at the moment when cannon thundered at Verdun is, as we said before, incomplete, since, for two years more, the invader was at liberty to complete his work, methodically dismantling what the hazards of the bombardments had spared in the occupied towns. Nevertheless, it was as well to quote from it, for the cynical admissions which are displayed in it constitute the very best preface it would be possible to find for the investigation with which THE INDIA RUBBER WORLD has intrusted us regarding the ravages committed by the German armies in the rubber factories of the occupied regions.

BELGIUM.

Before the war, Belgium represented a double interest, as far as rubber was concerned: it was both an importer of the crude article and a rubber manufacturing center.

The Belgian port of Antwerp was the place of discharge for huge cargoes of crude rubber, the wild grades of which came from the Congo, while the plantation varieties were shipped from the Netherlands East Indies or the Federated Malay States, where the Belgian capitalists had very large interests. For these two kinds of merchandise, the market of Antwerp was of the utmost importance and ranked immediately after that of London.

This facility in the matter of obtaining supplies of the raw material, combined with the cheapness of fuel and the abundance of labor, caused the erection on Belgian territory of numerous establishments where practically all articles of rubber were manufactured, from tires to surgical supplies.

In Antwerp there was a very powerful group of importers, most of them quite well-known in the United States, for instance: Grisar & Co., Bungé & Co., Osterrieth & Co., L. & W. Van der Velde, G. & C. Kreglinger, who in 1913 had received about 8,000 tons of rubber coming from Africa and chiefly from the Congo, 3,000 tons arriving from the plantations of Ceylon, 1,000 tons from the Straits Settlements, shipments from Borneo, the Ivory Coast, and from Dahomey; in short, about 15,000 tons of rubber, of which a certain quantity was reexported to France, Germany, the United States, and above all to Russia. A considerable part, 4,000 to 5,000 tons, however, remained in the country to be converted into manufactured products. For a population of 7,500,000 souls, this proportion was large, for France with 40,000,000 inhabitants did not consume more than 16,000 tons of rubber, and England, not more than 20,000 tons. This, therefore, shows the industrial activity of the country.

Under such circumstances, it is easily understood that at the time of the German invasion, which came about as suddenly as it was unexpected, the stocks of crude rubber lying at the docks of Antwerp must have been considerable and may have run into several thousands of tons. Thanks to the speedy and efficient measures taken by the owners, the greater part of this merchandise was removed to England and escaped seizure by the enemy.

According to information which the Grisar company of Antwerp has kindly furnished, when the Germans occupied the great Flemish port, only 632 tons of crude rubber were captured, for which, however, they paid with worthless requisition tickets. This represents a dead loss of about 30 million francs to the Belgian importers. A portion of this material was forwarded to Germany, where the Continentale undertook to use it, and the rest was sent to Brussels, where General von Bissing ordered a military factory to be installed in the Jenatzky-Leleuz works, for the purpose of manufacturing tires and tubes to supply the automobile service of the campaigning armies.

For the reasons previously mentioned, the Belgian rubber industry in 1914 had attained a very high degree of prosperity. This industry was created in 1852 when Gustave Luyck built his works at Molenbeek-Saint-Jean, just outside of Brussels. Soon after, in 1859, an American, J. G. Stickney, one-time partner of Samuel Colt, uncle of Colonel Samuel P. Colt, of the United States Rubber Co., established himself at Menin, and applied to the treatment of rubber the new processes of vulcanization that Goodyear had just discovered. The increasing popularity of the bicycle and the development of the automobile afterward led to the manufacture of various products in which rubber was used in a number of ways. Finally Belgium, like Goodrich, produced "Everything in Rubber."

MAJOR LEON OSTERRIETH.

Next to the house of Englebert & Co., which is one of the largest European firms, were the works of the Cie. Coloniale du Caoutchouc, Ghent; the Société pour le Commerce et l'Industrie du Caoutchouc, Alost and Brussels; Ghyssel & Co., Lembecq; Hannot at Selessin, Defauw Frères and Latour, Capelle et Goethals, Menin; Jenatzky - Leleuz, Brussels. At Brussels, too, were established the Manufactures des Cables Electriques et de Caoutchouc and finally, there was the factory of the Société des Cables Electriques, at Huysinghem.

Among the concerns of minor importance may be noted Michel-Jackson, Menin; La Manufacture Belge de Caoutchouc, d'Amiante; the Société Anversoise, Antwerp; the Société Anonyme de Caoutchouc and the Cie. Générale pour la Fabrication du Caoutchouc, Brussels; Finet Ducobu, Boussu-les-Mons; Gevaert et Fils, Deynze, and Lechat, at Ghent.

In consequence of the German occupation, all these factories, with one single exception, are in such a plight that it is absolutely impossible for them to work, and thousands of laborers formerly employed are out of work and penniless. Those factories that were near the firing line, like the factory at Alost and the two establishments at Menin, no longer exist. They

have been completely destroyed by the bombardments and not a stone has been left standing. As for the others, even if the main walls still stand, the reserves of raw material, the stocks of manufactured goods, and every bit of machinery have been methodically removed by the Germans. Mills, calenders, mixers, tables, presses, vulcanizers, molds, mechanical and electric motors, generators, were first concentrated at Brussels, and finally taken to Germany, to be distributed among the manufacturers beyond the Rhine. Except the works of Jenatzky-Leleuz, which by special favor have been spared, nothing to-day remains of the other establishments but the four walls.

"Alas!" said Oscar Englebert during an interview, "the Boches have occupied our factories since the beginning of the war, and God knows how we have had to suffer from this occupation! At the outset, when they considered themselves victorious and expected to annex Belgium, their depredations were slight. They contented themselves with occupying the buildings, organizing a storehouse for tires, installing photographic workshops of the army, and creating barracks for transient soldiers, where sometimes as many as 2,000 men were lodged. During this relatively quiet period, the General Staff was content with ordering the removal from our works of all the stocks of pneumatic and solid tires, as well as tubes. After the repulse on the Marne and the halt on the Yser, all the raw materials were requisitioned, from rubber to sulphur, from the reclaimed rubber and factices to the talc, from the fabrics to the steel wires. Then came the turn of the heavy machinery; mills and calenders, steam boilers and kettles, all were shipped to Germany. To remove these enormous pieces of machinery, the walls had to be broken, the foundations had to be dynamited, so that the factories are at present in a state of complete devastation."

The proprietors were not to be spared a single annoyance. The head of the concern, Oscar Englebert, was brought before the Prussian court martial on the charge of having concealed a part of his stocks and thereby disobeyed the orders of the Kommandatur, and it was due only to his rights as Consul of Spain, at Liège, that he escaped deportation to North Germany. Despite these experiences, M. Englebert has lost none of his energy, and is actively engaged in restoring his factory, which he hopes to be able to put in working condition within a few months.

The same condition is found at the Colonial Rubber Co., Ghent, which used to manufacture tires. The buildings are left standing, but the stocks and machines have disappeared.

Of the factories of the Société pour le Commerce et l'Industrie du Caoutchouc, the one at Alost no longer exists; the other, at Brussels, has been deprived of its heavy machinery and all its belting. The smaller pieces, the tools and molds, have been broken up and sent away to be melted.

The conduct of the Germans with regard to the works of Ghyssel & Co., at Lembecq, was singular. During the period in which they believed that they were victorious, they enlarged the works and considerably developed the manufacture of tires; but as soon as the tide of war began to turn against them, they hastened to remove all the machinery and implements, leaving nothing but the buildings.

The structures belonging to the two factories of the Cables Electriques at Brussels and at Huysinghem are intact also, but all supplies and the stocks of copper wire have been removed and a great part of the apparatus has been broken up and sent away to be melted.

In the midst of all this devastation, the buildings of the Jenatzky-Leleuz works at Brussels alone have been left with their machinery intact.

A very rough estimate places the total damage caused to the Belgian rubber industry by the occupation, the requisitions, and the thefts by the German army, at one hundred million francs. Should not the Huns reimburse this amount?

URGENT NEED OF RAW MATERIALS AND EQUIPMENT FOR THE RESUMPTION OF INDUSTRY IN BELGIUM.

The urgent need of raw materials and equipment in reestablishing Belgian industries is emphasized in a report by Trade Commissioner Harry T. Collins, Brussels, Belgium. The estimate given in the following abstract is based on the requirements for the first three months of resumption of industry, covering the principal articles of rubber or containing rubber. Materials which are undoubtedly being obtained in Belgium have been omitted.

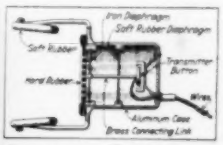
Coal mines:		
Rubber for joints	*metric tons*	15
Waste for packing		15
Insulated wire	*meters*	240,000
Mining cables		100,000
Rubber belting		18,500
Glass industry:		
Rubber belting	*meters*	425
Sheet rubber	*square meters*	540
Rubber check valves	*number*	448
Textile industries:		
Rubber rollers	*metric tons*	3,160
Paper industry:		
Rubber cloths for machines	*number*	14
Rubber guide belts	*meters*	70
Rubber belts		15,000
Rubber blocks	*metric tons*	6
Rubber sheets		6

AVIATOR'S WIRELESS-TELEPHONE APPARATUS.

Some weeks ago the Secretary of the Navy conversed with an aviator in flight, 150 miles distant from the Secretary's desk. This broke all former records, which were from 40 to 50 miles.

(C) *Underwood & Underwood, N. Y.*

TELEPHONE HEAD-PIECE.



SECTION OF TRANSMITTER, SHOWING RUBBER PARTS.

A sectional view of the instrument employed by the aviator shows it to contain a hard-rubber mouth-piece, an internal soft-rubber diaphragm to exclude dust and water from the transmitting mechanism, and soft-rubber cushions bearing against the face of the aviator who wears the instrument held in place by elastic straps, as shown in the picture. By means of a device of this sort, Lieutenant Herbert E. Metcalf delivered President Wilson's cable address 3,000 feet in the air.

SULPHUR PRODUCTION TO INCREASE.

The Texas Gulf Sulphur Co. has opened two new sulphur wells at Gulf, Matagorda County, Texas, and is developing very large deposits of sulphur similar to those already operated in Louisiana and Texas. Over 1,000 tons are now being received daily. This makes three sulphur companies producing from the Gulf region: the Union Sulphur Co., which is the original and which developed the Frasche process; the Freeport Sulphur Co., which has been in successful operation for several years, and the Gulf company, which has just come into operation.

PHILIPPINE IMPORTS OF RUBBER GOODS.

Imports of rubber and rubber goods into the Philippine Islands during 1918 are given in recently published statistics as follows: rubber and manufactured rubber goods, excepting tires, $581,559; automobiles and parts, including tires, $3,262,832.50. Attention is directed to this evidence of the buying power of the people of the Philippines, numbering about 10,000,000.

The Goodyear Rubber Plantation.

WHEN The Goodyear Tire & Rubber Co. determined not long ago, to organize a plantation for the production of a large part of the rubber they require in their Akron factories, they sought one of the best locations to be found in the Far East and found it in the northerly part of the island of Sumatra. This extensive island lies parallel to the Malay peninsula, a short distance to the westward. Sumatra belongs to Holland and contains large areas specially suited for the growth of the *Hevea* or Pará rubber tree.

AN IDEAL LOCATION.

The new Goodyear enterprise is located near the region of volcanic mountains about one-half hour's ride by motor car from the town of Siantar, the center of the tea district of the northern section of Sumatra. Here a vast plantation is in process of formation, embracing 20,000 acres of jungle land. Between 8,000 and 10,000 acres have already been planted with rubber trees.

The soil is plentifully supplied with such mineral salts as sulphates and phosphates of alumina, iron, lime, magnesia, potash and soda, as well as carbonate of lime. It is probable that no better rubber-growing land is anywhere to be found. The site chosen lays at an altitude of from 300 to 500 feet and the land is gently undulated and well supplied with streams.

AMERICAN MANAGEMENT AND EQUIPMENT.

On this estate from 7,000 to 8,000 laborers are employed. Some of these are imported from Java, some from China, and others from India. There is a small proportion of native Sumatrans among the number.

Practically only American-made machinery and tools are employed in preparing the land and operating the plantation, such, for example, as engines, tractors, stump pullers, automobile trucks, picks and other hand tools.

The army of coolies is supervised by a competent staff of overseers, planters, and engineers.

LABOR AND SANITARY CONDITIONS SAFEGUARDED.

The general manager of the Goodyear plantation, in speaking of this company's accomplishment, gives the following outline of the work involved. The plantation is divided into six divisions, each approximating 3,000 acres and under a separate manager. About 3,000 acres of jungle in the 20,000 of the plantation

AN ASSISTANT'S BUNGALOW.

estate are reserved for the natives. The laborers are accorded the very best treatment. Labor troubles are entirely eliminated and the coolies are thoroughly contented.

The plantation is distant 75 miles from Medan, which is very close to Belawan, its port of shipment, and in its various appointments is practically independent of the outside world. There is a plantation hospital with 400 beds and the best medical attention is thus made available for the needs of the plantation workers. Sanitary conditions are being steadily improved.

CLEARING THE JUNGLE.

The plantation area was overgrown with the densest jungle anywhere to be found and many of the trees were enormous.

In the process of cleaning the jungle for planting, axemen fell the trees and are followed by Chinese plank sawyers who save all the lumber possible for use in constructing the coolie quarters. It requires the labor of 1,300 coolies for two months to fell the timber on 3,000 acres.

CLEARING AND PLOWING BY STEAM TRACTORS.

After removal of the underbrush and timber the stumps are removed by special pullers and tractors. No explosives are used in the work. After clearing, the land is plowed by a big steam tractor, to the depth of about 20 inches. The effectiveness of plowing by tractor is shown by the fact that by this means twenty acres can be plowed in a day, while 250 coolies can plow

THE BEGINNING OF ROAD BUILDING.

but three acres in the same time. About 100 trees are planted to the acre and the entire tract is kept free of weeds. The labor of felling and uprooting the jungle trees and cleaning away the underbrush preparatory to planting represents only a part of the work of establishing a plantation.

ONE HUNDRED AND TWENTY-FIVE MILES OF GOOD ROADS.

Good roads must be built that all parts of the plantation may be reached easily and quickly. Building and maintaining highways must be a constant development and already 125 miles of substantial roadway has been built on the new plantation. The whole scheme is a huge engineering proposition terminating in extensive factory and shipping facilities to handle the latex and prepare the rubber.

THE ENTERPRISE OF GOODYEAR.

The development of this newest all-American rubber plantation is of much interest to the rubber industry all over the world. The Goodyear company has so often accomplished comparably big things that a twenty-thousand acre rubber plantation at the Antipodes seems quite fitting to go with the Goodyear scheme in general. It is interesting, however, to conjecture not only what

the conservative fathers of the industry of a couple of generations ago would have thought of this development, but how they would have regarded the huge Goodyear cotton acreage in Ari-

A MATURE AREA.

zona with its twenty or more gins; the Goodyear cotton-duck mills in Connecticut, and the Goodyear factories in Canada? Belike, they would gravely disapprove them all as things that broke trade precedents and overturned existing conventions. Were these respected worthies alive to-day they would certainly marvel and ultimately approve these daring projects of the "Napoleon of the rubber trade."

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(710.) A manufacturer requests the addresses of makers of gummed tape for sticking tire wrappings.

(711.) An inquiry has been received for the addresses of manufacturers of paint such as is used on rubber toys, balls, etc., and which will not crack.

(712.) A correspondent desires the addresses of manufacturers of tissue-paper transfers for marking inner tubes.

(713.) A correspondent wishes to get in touch with manufacturers of valves suitable for small air seat cushions.

(714.) An inquiry has been received for the addresses of manufacturers of machinery for making rubber stamps.

(715.) A reader requests the addresses of manufacturers of collapsible tubes for rubber cement.

(716.) A manufacturer requests data concerning the use of creosote solution in improving the quality of washed brown crêpe.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,079.) A firm in Spain desires to purchase automobile truck tires. Quotations f. o. b. New York, cash against documents. Correspondence in Spanish.

(29,120.) A commercial agent in France desires agency for sale of druggists' sundries. Correspondence may be in English.

(29,122.) A man in Denmark desires agency for sale of elastics, garters, dress shields, etc.

(29,142.) A Norwegian firm desires to purchase and an agency for sale of rubber and rubber goods. Payment through New York bank, preferably cash against documents at destination.

(29,149.) A Norwegian manufacturing firm desires to purchase rubber goods, fingers, gloves, footwear, etc. Payment through New York bank.

(29,153.) American firm with Italian branch and planning other European offices, desires agencies for insulated wire and cables, rubber goods, and all machinery and materials for their manufacture.

(29,156.) A Norwegian firm desires to purchase and an agency for sale of rubber goods, rubber shoes, etc. Cash against documents, destination or New York.

(29,157.) A Norwegian firm desires to purchase and an agency for sale of belting, rubber, rubber goods, etc. Credit through local New York banks.

(29,161.) A man in Norway desires to purchase and an agency for sale of rubber and rubber goods. Cash against documents.

(29,162.) Representative of Danish firm now in America desires to purchase and an agency for sale of rubber garments. Correspondence may be in English.

(29,168.) Norwegian firm desires to purchase and an agency for sale of rubber and rubber goods. Cash against documents, New York or destination.

(29,194.) An American firm with Danish branch office desires agencies for sale of rubber goods, wearing apparel, etc. Opportunity offered for display of goods in Denmark.

(29,219.) A man in Switzerland desires to represent first-class American firms to sell pneumatic and truck tires. Correspondence may be in English.

(29,249.) An Italian desires agency in Italy for sale of shoes and rubber goods. Correspondence in Italian.

(29,272.) Three firms in Belgium desire to communicate with makers of solid and pneumatic tires.

(29,274.) Belgian firms desire agencies for balata belting.

(29,284.) A Swedish firm desires to purchase and an agency for fountain pens. Quote f.o.b. New York.

(29,312.) A Norwegian firm desires to buy and an agency for sale of rubbers, rubber heels, etc. Cash against documents at New York or destination of goods. Quote f.o.b. New York.

(29,362.) Exclusive agency desired for sale of rubber goods at wholesale by man in this country expecting to establish offices in Paris and Brussels.

(29,366) A Belgian firm desires to communicate with makers of balata belting.

(29,372.) Belgian firms desire to purchase machinery belting.

(29,378.) Man in South Africa desires to purchase golf balls, etc. Submit catalogs and prices. Payment through an export house.

HOW TO TAG A TIRE.

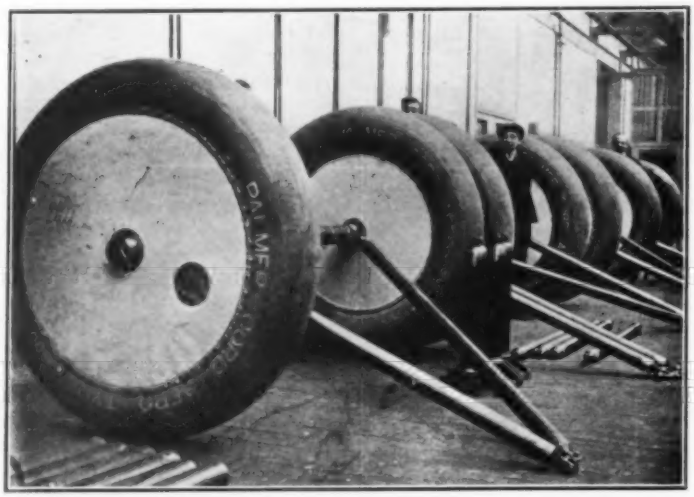
When the average man tags a tire he ties it so the tag hangs on the outer rim. The most natural way to move a tire is to roll it, whereby the tag is often damaged or torn from the tire. The right way is to tie the tag so that it hangs on the inside. Then another tag should be securely fastened to the inside of the tire.

AVOILAS COMPOUND IS A NEW VEGETABLE OIL LUBRICANT AND softener having a melting point of 90 degrees F. It is said to offset the tendency of free sulphur coming to the surface and to render easily removable from the molds all classes of molded goods.

Giant Tires for Handley-Page Airplanes.

PROBABLY the largest pneumatic tires made for any purpose are those with which the famous Handley-Page airplanes of the British Government are being equipped. They are Palmer Cord Aero Tyres 1500 by 300 mm. (59 x 11.8 inches), or approximately five feet in diameter and one foot in cross-section, and greatly exceed all regulation pneumatic-tire sizes for either airplanes or motor trucks.

The 1918 S. A. E. specifications for United States Government airplane landing wheels specify four sizes, the largest of which is 800 by 150 mm. (32 by 6 inches), the others being 750 by 125 mm. (30 by 5 inches), 700 by 100 mm. (28 by 4 inches), and 700 by 75 mm. (28 by 3 inches). It was anticipated, however, that larger sizes would probably be required and added to the list. The specifications call for tires of the clincher type, smooth tread, constructed of two or more cord plies of long-staple cotton, so arranged that an equal number of plies run in each diagonal direction across the tire, each ply being separated from the adjoining ply by rubber compound. Even the giant cord pneumatics now being turned out by American manufacturers are dwarfed beside these Palmer airplane tires, the largest pneumatic truck tire regularly on the market being 48 by 12 inches, and other sizes being 42 by 9, 40 by 8, 38 by 7, and 36 by 6.



(C) *Underwood & Underwood, N. Y.*

TIRE EQUIPMENT OF THE "BERLIN BOMBER."

That these giant tires are needed becomes evident on considering the size and weight of the Handley-Page airplane. Its wing span is 126 feet, the width of the span is 12 feet, and the length of the fuselage is 65 feet. Equipped with a 350-h.-p. Rolls-Royce engine and known as the "Berlin Bomber," it weighs 15 tons fully loaded, over 5 tons of which is useful load.

This type of machine represents the maximum achievement in heavier-than-air flying during the war, and now promises to be used extensively in commercial aviation, as it is able to carry, for example, a five-ton load of passengers, mail, or merchandise in a non-stop flight equivalent to the distance between Boston and St. Louis, in twelve hours. It will be recalled that one of these great airplanes flew from Ipswich, England, to India, a distance of 5,800 miles, last winter and covered 700 miles of the distance over the Mediterranean, which was a record flight for a land machine flying over water. It is also one of these machines which recently arrived in Newfoundland, and with which a transatlantic flight will be attempted sometime during the month of June.

As compared with the airplane tires of former years these latest and largest tires represent a startling development. In the early days of aviation all sorts of makeshifts were resorted to. Bicycle and motorcycle tires of fabric construction were first employed on some of the pioneer machines, but they proved costly and uncertain. Later, as larger and heavier machines were constructed to carry more passengers and heavier loads, some builders even went so far as to use full-size automobile tires. The latter answered so far as reducing the shock of landing was concerned, but were far too heavy and offered too much wind resistance.

The development of special tires to fit the peculiar requirements of aviation began about 1910. It was soon discovered that great resiliency is a very important factor and that a live, springy tire not only helps to absorb the shock of landing but actually aids the machine to get off the ground at the beginning of a flight. The need of security against punctures and blowouts was also appreciated. As the superior resiliency of cord tires for motoring had become recognized and the success achieved by this type of tires in automobile track races had demonstrated their dependability, experiments were made with cord tires in aviation, with the result that cord tires for airplanes have been refined to a point of efficiency equal to that of cord tires for gasoline and electric automobiles.

The Palmer was probably the first tire of cord construction to be used for aviation purposes in England, and it has ever since held a prominent place among airplane tires. Invented by an American, John F. Palmer, of Chicago, in 1893, this parallel-thread fabric construction was first used in racing tires on bicycles and later modified and first applied to the manufacture of automobile tires in 1900. In its latter form it was known as the Palmer cord to distinguish it from the lighter Palmer bicycle tire. It consisted of two layers of parallel-lying cords crossing each other at such an angle that they were tangent to the rim and nearly in the line of strain which falls upon all equally. Each cord consisted of several threads carefully rubbered and flattened.

More recently, as the disadvantages in using round cord were recognized, a new type of ribbon of flat cord approximately one-half inch wide was developed. These inextensible flat strips can be placed on the tire core at a true tangent to the rim, that is, at right angles to the spokes of the wheel. This position gives the most efficient power transmission from the rim to the tread for the reason that force is best transmitted in straight lines.

In America The B. F. Goodrich Co. in 1910 introduced as a regular product an airplane tire which in construction was a modification of the Palmer bicycle tire. It was smaller than a bicycle tire in diameter, but of larger cross section, being 20 by 2 and 20 by 2¼ inches. About the same time the Continental Rubber Works was making airplane tires in these same sizes and also 20 by 3 inches. The Pennsylvania, Goodyear, and Hartford companies were offering airplane tires 20 by 4, 26 by 2½, 28 by 2½, 28 by 3 and 28 by 3½ inches and weighing 6½ to 8¾ pounds each, the former company featuring leather as well as rubber treads. Two of the 20 by 4 tires were said to be capable of carrying a 1,000 to 1,200-pound flyer.

Tires combining extreme lightness with toughness and resiliency had thus been the early desideratum, but, with heavier and more powerful machines, maximum cushioning ability to resist the lateral thrusts that occur when an airplane side-swipes the earth in landing, became fully as important as light weight, so that large cross-section was essential. As early as 1909 Palmer cords had been made up to 7-inch cross-section, and in 1915 a new Goodyear airplane cord tire was brought out in America to meet this need. It was a 26 by 4 clincher with a carcass consisting of four to six-cord fabric layers. Since that time developments have been rapid, owing to the impetus of war, and various companies have been producing airplane tires of ever larger diameter and cross-section as the needs of the Government have advanced.

It is a far cry from the frail airplane wheels and small tires of 1910 to these giant wheels and Palmer cords with their canvas shields to prevent wind resistance to the turning of the wheel as a result of cross drafts through the spokes, but as the development of aviation has been phenomenal and revolutionary, so also has been the achievement in tire building. Indeed, the latter has been a big factor in making the former possible. But for cord-tire construction, the airplane might not be what it is to-day, and it is a matter worthy of more than passing mention that the Palmer tire, the pioneer in its class, still heads the list of progress.

PNEUMATIC TIRES ON TRUCKS.[1]

FOR vehicles up to 1,500 pounds capacity, inclusive, pneumatic tires should be used except under very rare conditions. Vehicles of 2,000 to 3,000 pounds capacity are being rapidly changed to pneumatic equipment in the large majority of cases, due to the development of the cord tire. A considerable percentage of 2 to 2½-ton vehicles will probably be placed on pneumatic equipment when the subject has been more clearly demonstrated and design changes which may be found necessary have been made.

A limiting factor to the preceding statements is to be found in the character of roads on which pneumatic equipment is operated, and the freedom of the roads from litter of scrap-metal, glass, etc.

The modern cord tire is excellent for operation on almost every kind of road. The structural strength of these tires renders them less susceptible to injury from stone bruises, etc., when operated on rough roads, if the proper inflation pressures are used, than the fabric type. The types of tread which have been developed are of great assistance in snow and mud and on wet surfaces. In consequence, with these advantages, it is safe to say that the pneumatic tire will compare favorably with the solid tire under almost every condition of road.

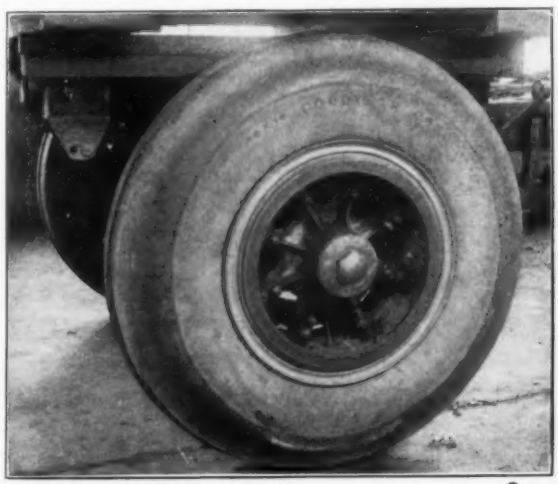
ADVANTAGES OF PNEUMATIC TIRES.

The claims of advantage may be listed as follows: (1) reduction in mechanical repairs; (2) increase in permissible speed; (3) decrease in gasoline consumption; (4) decrease in oil consumption; (5) less fatigue for men; (6) lessened depreciation of roads; (7) greater tractive ability.

OBJECTIONS TO PNEUMATIC TIRES.

The objections to pneumatic tires are not so numerous, but need careful consideration lest the prospective buyer be carried away with the idea that their use offers a solution for all troubles, and involves no special problems needing attention. The objections are: (1) high initial cost compared with solid tires; (2) the need of carrying emergency equipment; (3) the difficulty attendant on making road changes due to weight and high inflation pressures required; (4) reduction of the high-gear ability and limitation of the total ability due to larger diameter of wheels; (5) limitations imposed on the size of brakes, due to the small size of wheels.

The larger sections used in these tires, together with the space taken up by the demountable rim, leave a very small wheel diameter, and this imposes severe limitations on the size of brake



From "The Journal of the S. A. E."

12-INCH CORD TRUCK TIRE ON REAR OF TRAILER.

equipment and decreases the ability of the brakes at the same time. This is very important because the greater speeds put considerably heavier duty on the braking systems.

The heavy duty pneumatic tire, particularly in the larger sizes, has come into prominence in the last few years when engineers were so completely occupied as to leave little time for the thorough investigation of the subject to determine what effect their use would have on future design. That there will be need of a considerable change in design with respect to some particulars seems very evident.

The increase in speed carries with it a demand for more efficient brake equipment. Inasmuch as air pressure will be needed to inflate the tires, calling for an efficient air compressor, it may be found feasible to add the other elements necessary to provide for the use of air brakes.

PRACTICAL TEST.

A leading American tire manufacturing company is manufacturing a cord construction pneumatic tire of the straight-side type which has proved a successful commercial proposition.

A fleet of five-ton trucks last year made a successful trip from Boston to San Francisco on 40 by 8-inch front and 44 by 10-inch rear pneumatic tires. This trip was made in 257 hours and 10 minutes running time at an average of slightly over 14 miles per hour, a full load being carried all the way. The trucks at the end of the trip were in excellent condition and the whole performance was rendered possible by reason of freedom from vibration troubles resulting from the cushioning qualities of the big pneumatic tires.

GENERAL ELECTRIC CO. ELECTS DIRECTORS.

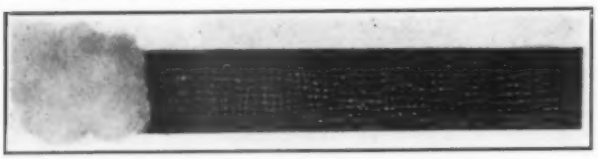
The General Electric Co., Schenectady, New York, at its meeting held May 13, 1919, elected the following directors: Gordon Abbott, Oliver Ames, George F. Baker, Jr., Anson W. Burchard, C. A. Coffin, George P. Gardner, Henry L. Higginson, Robert Treat Paine, 2d, Marsden J. Perry, Seward Prosser, E. W. Rice, Jr., Charles Steele, Philip Stockton, and B. E. Sunny.

[1]Abstract from a paper by B. B. Bachman, published in "The Journal of the Society of Automotive Engineers," April, 1919, pages 298-302.

Developments in Rubberized Unwoven Fabrics.

By Roland B. Respess.

WOVEN FABRICS and fibrous materials enter very largely into rubber manufacture, for strengthening or "filling" rubber goods. Fibers have been used as a filler by mixing with rubber and sheeting out of the compound or forming it in molds. Where it is desired that the fibers be of the form to give considerable added strength to the rubber products woven cloth is usually employed. Unwoven fabrics give as great



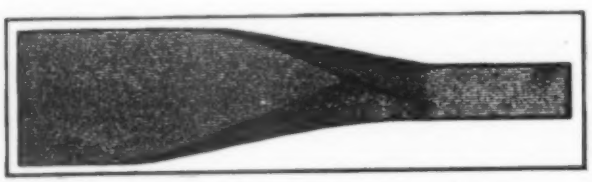
FROM COTTON BATTING TO ARTIFICIAL LEATHER.

or greater strength than woven goods, and may be used in rubber manufacture more cheaply than woven goods, and are therefore, not only of interest as offering possibilities in improveing the product but in cost reduction as well.

The writer experimented to produce an unwoven fabric to be used in making automobile tires. His first attempts were along lines disclosed as far back as 1867 in a patent issued to Charles Saffray, M. D., who used a cotton batting which he saturated with a binding agent, using wire mesh to hold the fiber sheet when dipped in a thin liquid solution, after which it was pressed to take out the excess solution, and dried and sheeted, to be used as a leather substitute. Investigation of the patent records did not disclose a practical method of manufacture, and the writer started out to devise and develop such methods.

In his early experiments he succeeded in making a strong sheet resembling split leather, which was capable of being coated and embossed to simulate leather, but this sheet was no more successful than the experiments of a number of others, and it was decided that such fabric would not be suitable for automobile tires because it would stretch like leather, and the tire probably would not hold its shape.

Experiments with cords and threads were then begun and later the fiber sheet was combined with the cords and threads. During the course of these experiments results were produced which appeared adaptable to many uses in the rubber trade, but the conditions resulting from the war presented a serious handicap due to the difficulty in gaining assistance from those who were engaged in government work. After two years of con-



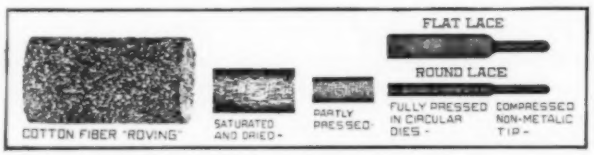
RUBBER TAPES OR BELTING, OF COTTON FIBER.

stant work, the writer is now able to present a brief outline of what he has accomplished and covered by his patents and applications for patents.

The production of leather substitute, for instance, has been worked out to the point that the cotton from the bale, or cotton linters, old rags, old jute bags, etc., are put in a picking machine that picks apart the fibers, which are then fed to a carding or garnett machine and formed into fiber batting of any width or weight desired. The fiber then passes to a saturating machine where a heavy rubber solution is pressed into the fibers to saturate or coat each individual fiber, after which it goes to a dryer where the solvent is evaporated, and then it is passed between heavy pressure rolls and pressed into a firm sheet resembling split leather, the entire process occupying not over twenty minutes—from cotton to "leather."

This leather is then ready to be coated with rubber surface dressing after which it may be embossed to design and vulcanized; or, if the leather dressing is to be of cellulose or similar dressing, the sheet is vulcanized and then coated, after which it may be embossed to any design required. The leather may be made any weight or width and any length in which the rolls may be handled. Its strength can be varied as may be required, and some samples produced have tested up to 6,250 pounds to the square inch, giving nearly double the strength of standard belt leather. For greater strength there are other processes, including strings or cords placed in the direction of greatest strain, which will produce belting having a tensile strength up to 10,000 pounds.

The peculiarity of this leather when examined closely is that it does not look like rubber at all, but resembles genuine leather. It is difficult to decide that rubber actually enters into its composition. The stronger sheet has the appearance of raw-



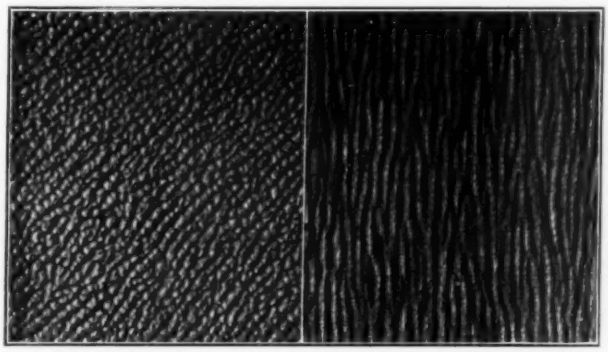
RUBBER SHOE LACES MADE FROM COTTON FIBER.

hide and the other sheets look like split leather. By use of a sizing on the surface of the cotton sheets before saturation, a product almost identical with the hair side of genuine leather is produced. It may be finished with ordinary shoe polish or dressing and resembles and has the feel of kid leather. Any kind of dressing that is used in finishing leather or artificial leather may be used. It may be finished by hand as hides are finished, and give the same rich appearance, or it may be finished by machinery as artificial leather is produced. The samples finished in black or colored patent leather feel and look like the genuine article. There seems to be a perfect affinity, in this process, between the cotton and the rubber and between the rubber and the cellulose or oil dressings.

The field for use of this leather alone seems very great, but the leather in sheet form seems only the beginning of its possibilities. After the sheet rolls are prepared and before they are vulcanized, the material may be cut to forms and molded or laminated and thereafter vulcanized to retain its form. This quality opens a wide field for development in the manufacture of power and transmission belts which may be made with or without the thread or cord reinforcement; also shoe counters and slippers vulcanized in one piece may be produced and such slippers may be sterilized, subjected to any reasonable heat or boiled without injury. Hospital blankets may be made without the cold, clammy feel of rubber blankets and yet having their waterproof qualities. Also boxes, cases, suitcases, bags and hundreds of small formed articles for which leather has been heretofore used exclusively, may be produced rapidly and cheaply.

The same principle applies to the production of narrow belts and straps, cordage, shoe laces, etc. The cordage may be used in weaving or braiding fire-hose coverings which will not be subjected to mildew and water rot. The processes also cover new methods of making shoe soles, one of cotton or other vegetable fibers and the other utilizing waste leather and reconstructing it to give as good wear as real leather. In fact there seems hardly a product into which leather or woven fabrics enter which may not find use for these new processes.

The above relates only to unwoven fabric which contains no twisted threads or cords nor woven goods. The processes covering the use of cords and threads cannot be explained in detail at this time, but it may be said that it is possible to place cords or threads in any predetermined design combined with the fiber sheets or without the fiber sheets and at less cost than woven goods can be produced. In this process the rubberizing



ARTIFICIAL LEATHER BACKED WITH UNWOVEN FABRIC.

is not considered in comparison, inasmuch as all such fabric must be rubberized and the same methods now in use are employed.

Consideration of the known weaknesses of woven fabric, especially with regard to the bending strain when it is brought under tensile strain, seem to make an unwoven fabric, which may be used in the same manner as woven fabric, especially desirable. Moreover, the use of straight cord or thread in a square yard of fabric would allow the employment of approximately 25 per cent additional threads in each direction as compared with woven goods in which the thread or cords must bend to one-half circle every other thread. The fact that any strain on straight cords must be entirely tensile on each thread and will not have the bending strain that occurs in woven fabrics should be in favor of the straight-line thread or cord fabric.

These processes also cover a matted thread or cord unwoven fabric in which no straight lines appear but which is entirely made up of overlapping curves in predetermined matted design and the fabric may be made to be used in the construction of a tire, the exact width required for each size, without cutting at angles, lengthwise of the fabric, and such fabric may be made rapidly and economically in any tire factory with very little additional cost in equipment. This construction gives extraordinary strength and resiliency and may be produced for less than the cost at which woven goods can be made and sold.

Another process covers a fabric of entirely new construction, unlike any fabric now known, and which will make a super-tire. Threads or cords are employed and the fabric may be made in any rubber factory by the addition of inexpensive machinery.

All the processes require very few special machines, and such as may be required are simple adaptations of machinery now in use for other purposes.

Matters of this kind which may become important to the entire industry are of general interest as affording great possibilities through future development. It is of interest to know that the inventor intends offering his processes to the trade under royalty, as he does not contemplate engaging in manufacturing the products.

USEFUL HINTS FOR THE RUBBER LABORATORY.

By D. Repony.

ACETONE. Directly after acetone has been received it should be redistilled and afterwards kept in a tin can or dark-colored bottle, otherwise it becomes oxidized when exposed to the light and will leave residue upon evaporation, which will give false results by acetone extraction.

EVAPORATING GASOLINE. As directed by the Underwriters' specifications for gasoline hose, the gasoline from hose immersion should be evaporated to dryness, which is difficult, due to the high boiling series. This is, however, easily accomplished by blowing compressed air over the gasoline surface. Should the volatilization required be greatly accelerated, introduce at a convenient place in the rubber tubing a piece of metal piping and heat this portion with a gas burner. The heated air volatilizes the gasoline rapidly.

RUBBER SAMPLES. The rubber sample for alcoholic potash extraction should be ground to small particles. When the sample is cut by scissors the large pieces require long boiling for complete extraction, and this is especially the case in such rubber compounds as contain but a low percentage of fatty substitute.

SCORCHED RUBBER. Rubber scorched during mixing or calendering can be recognized upon immersing in gasoline, where it will swell considerably, but will not paste in uniform collodial cement.

THE BEST SOLVENT. Boiling kerosene is by far the most practicable and cheapest solvent for vulcanized rubber.

CLEANING FLASKS. Flasks after acetone extraction are easily cleaned by first pouring in a few drops of benzol and afterwards a few cubic centimeters of crude nitric acid. Heat the charge on steam bath and then wash it out with water.

DISTINGUISHING RUBBER FROM BALATA. To distinguish with accuracy whether the belting in question is rubber or balata, immerse one ply in chloroform. Balata will paste in solution, and float on the surface, while rubber will swell considerably but will not paste in solution.

PAINT FOR HOODS. Metal or wooden hoods, or exhaust pipes which come in contact with acid fumes, are best preserved by being occasionally painted by asphalt benzol solution.

ANALYTICAL BALANCES. The vibration of a building, influencing the proper action of an analytical balance is avoided by placing a glass plate on sponge rubber legs. The glass plate should be considerably longer so that the legs of the balance rest about 5 inches from the sponge rubber legs toward the center.

TACKY RUBBER. To prevent tacky rubber from sticking to the extraction thimble, remove the wet sample directly after the acetone extraction, and dry it on a weighed watch glass.

CARBON DISULPHIDE. Carbon disulphide employed for quantitative extraction, should be freshly redistilled and the extraction should be performed by night, if possible.

CASTOR OIL. Castor oil, comparative with all other oils, has a very slight effect upon rubber, therefore it is best employed as a lubricant for such parts as are in connection with rubber.

LABORATORY TUBING. The most durable rubber tubing for laboratory use is of a rubber compound that contains a high percentage of paraffin and asphalt with the lowest possible content of free sulphur.

"THE POWER A MAN PUTS INTO SAVING MEASURES THE POWER of the man in everything he undertakes."—(Frank A. Vanderlip.) Buy W. S. S.

THE EDITOR'S BOOK TABLE.

CEYLON AGRICULTURAL SOCIETY YEAR BOOK. 1919-1920. Compiled by C. Drieberg, B. A., F. H. A. S. Ceylon Agricultural Society, Colombo, Ceylon. (Cloth, 16mo, 149 pages.)

THE latest edition of this well-known handbook has undergone considerable revision and contains much fresh matter pertaining to tropical agriculture of every sort as practiced in the Middle East, greater attention being given to crop notes than hitherto. The details of each culture are succinctly presented, and there is much tabular matter of a miscellaneous character for ready reference. A four-page article by Mr. Kelway Bamber, M. R. A. C., is devoted to the essentials of planting and the preparation of rubber.

PRACTICAL EXPORTING. BY B. OLNEY HOUGH. THE Johnston Export Publishing Co., New York City. (Cloth, octavo, 529 pages. Price, $5.)

Many books devoted to export business have been published of late, yet this volume by the editor of the "American Exporter" remains the standard work on the subject. Written by one who has for many years been intimately identified with this subject, and who has had personal experience in foreign markets, it now appears in a third revised edition more comprehensive than ever. The altered conditions brought about by the war are given due consideration, and firm executives engaged or about to engage in export business, will find the book replete with helpful suggestions, important information and authoritative data. Some idea of its scope may be had from the fifteen chapter titles which follow: Ways and Means; Some Mistaken Impressions; Markets for American Goods; The Export Department; Foreign Trade Correspondence; Traveling Salesmen Abroad; Advertising to Get Export Trade; Export Commission Houses; Local Foreign Sales Agents, Distributers and Branch Offices; The Export Order; Preparing Shipments; Making the Shipment; Marine Insurance; Financing Foreign Business; Credits, Acceptances and Collections.

A unique and particularly valuable feature consists of specimen blank forms as used by leading American export houses, railroads, steamship companies, bankers and consular offices properly filled out and bound into the book. These include form letters, export orders, sales contracts, export and consular invoices, bills of lading, permits, receipts, declarations, certificates, insurance policies, letters of credit, guaranties, drafts, acceptances and many other documents used in commercial relations with foreign buyers.

NEW TRADE PUBLICATIONS.

THE L. J. MUTTY CO., BOSTON, MASSACHUSETTS, IS REMINDING its patrons, old and prospective, of "Dridek" and other fabric products by sending them a handsome little stamp book and calendar bound in red leather, for vest pocket use.

* * *

THE MORSE CHAIN CO., ITHACA, NEW YORK, HAS REPRINTED IN pamphlet form an article on "Chain Drives" written by J. S. White and published in the 1919 "Yearbook of the National Association of Cotton Manufacturers." The article is devoted to an exposition of the advantages of chain driving rather than to exploit any particular make or type of power chain, but the company considers that the circulation of this article with its many excellent half-tone illustrations, must redound to the advantage of the makers of the Morse rocker-joint chain for power transmission purposes.

* * *

A STRIKING BIT OF TRADE LITERATURE, WHICH TELLS ITS STORY graphically, is entitled "Sixty Seconds and Out." It is published by the Foamite Firefoam Co., New York City, and shows, in a series of photographs, the efficacy of the company's product in extinguishing fires almost instantaneously. The pictures are so convincing that but little else is necessary to convey the story the company wishes to tell. The book is handsomely printed, and is one of the best examples of convincing advertising coming to this office.

* * *

UNDER THE TITLE "MAGNESIA PRODUCTS FOR THE RUBBER Trade," the General Magnesite and Magnesia Co., Philadelphia, Pennsylvania, has issued a very neat and complete booklet of 29 pages, treating of the properties of magnesia compounds, and their use in rubber compounding. Valuable data are given on their accelerating and chemical effects; also on their physical effects. Comparisons with German magnesias, with other minerals, and with organic accelerators are shown in a series of interesting curves. There is also given a number of formulas for the use of magnesia in typical rubber mixings.

* * *

ROGERS-PYATT SHELLAC CO., CRUDE RUBBER DEPARTMENT, NEW York City, has sent to the trade a novel blotter-chart printed in three colors and showing price fluctuations of the three standard grades of crude rubber for a period of years.

* * *

THE PORTABLE MACHINERY CO., PASSAIC, NEW JERSEY, IS circulating a well-arranged and attractive "broadside" sheet under the title "Over 1000 Scoop Conveyors." It tells by description, testimonials, and fine half-tone pictures, the advantages of the scoop conveyor manufactured by this concern, and shows its effectiveness in handling, at any desired angle, such raw materials as are used in manufacturing plants of different kinds, as well as coal, coke and ashes. Several rubber manufacturers are mentioned among the users of the device.

* * *

THE NATIONAL STANDARD TRUCK COST SYSTEM, ISSUED BY THE Truck Owners' Conference, Inc., 327 South La Salle street, Chicago, is now in use for checking the operation of over 18,700 trucks. It has been found that where supposedly accurate truck costs were kept there was a variation of 65 per cent in keeping the depreciation or sinking fund record, 21 per cent in handling maintenance changes and 13 per cent in keeping tire costs.

* * *

CALDWELL & CO. AND THE CALDWELL SHIPPING CO., WITH offices in New York City and seven other leading ports of the country, are mailing on request a 24-page pamphlet on "How to Ship for Export," which will be of practical value to all rubber firms engaging in foreign business. Ocean rates and space, railroad permits, lighterage, demurrage, trucking, warehousing and bills of lading receive particular attention, and important special facts are given regarding most foreign countries and principal ports.

"Railroad Freight Rates" is a 12-page pamphlet issued by the same companies, that contains the freight rates from various producing points on representative commodities moving for export. Pneumatic and solid tires, inner tubes, and air brake materials are the rubber goods mentioned.

* * *

"COMMERCE MONTHLY" IS THE NAME OF A WELL-EDITED AND nicely printed 32-page magazine which made its initial appearance dated May, 1919. It is published by the National Bank of Commerce in New York, "to serve as a medium through which the experience and investigations that have proved useful to this bank in the fields of industry, commerce and finance may be shared with its friends." The current issue contains nine features devoted to timely topics of much importance to American industry in home and foreign markets. One of these consists of a table of wholesale prices of representative commodities for the past seven years. All quotations are from recognized trade sources, the rubber prices being from THE INDIA RUBBER WORLD. Altogether it is a publication that will be read with interest and benefit by executives in every business.

What the Rubber Chemists Are Doing.

EFFECT OF CERTAIN ACCELERATORS UPON THE PROPERTIES OF VULCANIZED RUBBER.

AT the meeting of the New Jersey Chemical Society in Newark, January 13, 1919, a paper on the "Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber," by George D. Kratz and A. H. Flower, was read by the former. The main features of this paper and the authors' conclusions are given in the following extended quotations:

INFLUENCE OF ACCELERATORS.

The results recorded were obtained in the course of several investigations to determine the relative activity of certain inorganic and organic accelerators, and the permissibility in the use of the sulphur coefficient in evaluating samples of vulcanized rubber known to contain accelerators. This has consisted of: (*a*) a comparison of the relative effects of heavy calcined magnesia and an (unidentified) organic accelerator in a mixture containing only rubber and sulphur, and (*b*) a comparison of the effect of larger amounts of heavy calcined magnesia, light magnesia and lime in a mixture which contained an excess of zinc oxide.

Irrespective of the effect of accelerators upon the physical properties of the vulcanized mixture, possibly the advantage most often claimed for the organic variety in preference to inorganic substances is that in accelerating vulcanization, the former are much more active than the latter and can be used in small amounts to replace much larger quantities of litharge, magnesia or lime.

These investigations have not included a comparison of the relative effects of magnesia and p-nitroso-dimethyl-aniline. The organic accelerator which we employed in place of the latter substance was found to be far more active, when used in small amount, than were similar quantities of magnesia. Likewise, the physical properties of the mixtures which contained the organic accelerator were shown to be superior to those obtained with similar amounts of magnesia.

When the load required to effect a given extension is taken as a measure of the physical properties, we have found a marked decrease in the extension of the vulcanized mixture to be true for small amounts of magnesia; certain organic accelerators, however, were found to increase the extension. Under these circumstances, entirely erroneous results were obtained when two series of mixtures, one of which contained small amounts of magnesia and the other similar amounts of a strong accelerator, were tested by this method. Comparisons made on the basis of the loads required to effect a given extension are less reliable than those obtained by comparing the tensile strength and percentage elongation at break. In this instance the sulphur coefficient may be said to afford a fair index of the state of cure as measured by the physical properties of mixtures known to contain small amounts of either inorganic or organic accelerators.

This statement, however, was not found to be of general application, and certainly is not true for mixtures which contain larger amounts of inorganic accelerators in the presence of an excess of zinc oxide. We find that large amounts of zinc oxide effect a slight and limited increase in the rate of vulcanization (sulphur coefficient).

Contrary to what might be expected, we have found that mixtures which contained fairly large quantities of both magnesia and zinc oxide, when vulcanized to maximum physical properties, had lower sulphur coefficients than a control mixture which was vulcanized to the same degree without the assistance of an accelerator. The substitution of lime for magnesia in such a mixture, however, was found to produce quite a different effect. With lime, after an initial decrease in the sulphur coefficient, the latter value was found to respond to a further increase in the amount of the accelerator. This difference in the action of the two substances would indicate that their function in the mixture is not identical.

Our results with heavy mineralized mixtures have shown that such mixtures are not only subject to misinterpretation, but the constituents of the mixtures tend to obscure or mask the individual properties of the rubber used.

INDICATION OF SULPHUR COEFFICIENT.

Fundamentally, the purpose of any ordinary vulcanization is to obtain the maximum physical properties which the mixture will retain unimpaired over the longest period of time under the conditions to which it will be subjected. This physical condition may be largely independent of the sulphur coefficient, particularly if the mixture has been vulcanized with the assistance of an accelerator. Generally speaking, we have found that the sulphur coefficient does not afford a reliable indication of the physical properties of a vulcanized rubber mixture or that it can be taken as a measure of the state of cure except possibly in the case of mixtures which consist of rubber and sulphur only. We agree with Stevens, however, that for *Hevea* rubber practically all mixtures with a sulphur coefficient in excess of 3.2 will be subject to rapid deterioration.

In a former paper[1] we have given the limits for the vulcanization coefficient of *Hevea* rubber at 1.7 to 2.8. Under standardized conditions, the higher figure has been found to be consistently approximated by mixtures vulcanized without the aid of an accelerator, or with the assistance of one which is only mildly active. The lower figure has been found to apply for mixtures vulcanized with the assistance of even small amounts of powerful organic accelerators or larger amounts of magnesia. The anomaly found to exist between the action of magnesia and lime, however, indicates that a certain amount of reservation should be made in interpreting the coefficients of mixtures which contain either of these substances.

In view of our results as a whole, while we agree with Stevens that the sulphur coefficient is most important as an indication of the ultimate stability of the product, in general practice it should be considered as an indication only. Even in the case of mixtures composed solely of rubber and sulphur, we have found it dangerous to evaluate between them on the strength of their sulphur coefficients alone, unless the past histories of the samples in question are definitely known. As stated by Stevens, the true value of a product, as expressed by its state of cure, is obtained from physical and chemical tests only when they have been made after a definite period of aging conducted under carefully standardized conditions.

EXPERIMENTAL RESULTS.

TABLE I.

Accelerator Used.	Per Cent Accelerator.	Sulphur Coefficient.	Load in G. per Sq. Mm. Extended 1 to 9.	Tensile Strength in G. per Sq. Mm. (at Break).	Per Cent Elongation at Break.
Heavy calcined magnesia.	0.00	0.684	163	181	962
	0.10	1.012	...	564	937
	0.25	1.287	501	774	950
	0.50	1.500	633	766	912
	0.75	1.873	832	914	900
	1.00	1.724	886	914	912
	1.25	1.821	883	1002	918
Accelerator "A."	0.00	0.684	163	181	962
	0.10	1.202	402	621	925
	0.25	1.609	630	871[2]	900[2]
	0.50	2.079	678	1153[2]	975[2]
	0.75	2.347	664	1170[2]	1025[2]
	1.00	2.518	636	1250[2]	1037[2]
	1.25	3.004	642	1223	1087

In the case of mixtures vulcanized with the assistance of "Accelerator A," it is evident from the figures obtained for the percentage elongation at break that this property increased proportionately with the tensile strength; with magnesia, on the contrary, tensile strength was increased at the expense of elongation.

This difference in the effect produced in the percentage elongation by small amounts of accelerators prohibits the use of the load required to effect a given extension as a measure of the physical properties of the two series of mixtures. As the percentage elongation of a mixture is increased by the action of an organic accelerator or otherwise, unless this is accompanied by a corresponding and uniform increase in the tensile strength, a given extension will be effected by a lesser load than would normally be required. This was roughly found to be true with "Accelerator A." On the other hand, when the tensile strength is increased at the expense of elongation, as was found to be the case with magnesia, it will require an excessive load to effect the same extension. This decrease in the percentage elongation of mixtures which contained small amounts of magnesia was so marked that, with one per cent of this substance, an extension

[1] "Journal of Industrial and Engineering Chemistry," 11, 1919, page 30.

[2] These samples were pinched through by the clamps of the testing machine before the point of rupture, or break, was reached. Consequently, the results for tensile strength and elongation at break are low.

of 1 to 9 was produced only by a load just short of that required to produce rupture or break.

TABLE II.

Accelerator Used.	Mixture.	Per Cent Accelerator on Rubber. 0 Per Cent.	5 Per Cent.	10 Per Cent.	15 Per Cent.
Heavy calcined magnesia.	First latex.....	100	100	100	100
	Zinc oxide.....	100	92	83	71
	Heavy calcined magnesia	...	5	10	15
	Sulphur	5	5	5	5
Light magnesia.	First latex.....	...	100	100	100
	Zinc oxide.....	...	90	80	70
	Light magnesia.	...	5	10	15
	Sulphur	...	5	5	5
Lime.	First latex.....	...	100	100	100
	Zinc oxide.....	...	87	75	62
	Lime	...	5	10	15
	Sulphur	...	5	5	5

TABLE III.

Accelerator Used.	Per Cent Accelerator.	Time in Minutes for Technical Cure at 298° F.	Tensile Strength at Break, G. per Sq. Mm.	Elongation at Break, Per Cent.	Sulphur Coefficient.
Control	0	120	1,331	725	3.075
Heavy calcined magnesia.	5	90	1,553	700	2.586
	10	75	1,627	725	1.723
	15	45	1,402	675	....
Light magnesia.	5	90	1,322	700	2.780
	10	45	1,875	750	2.184
	15	40	1,350	775	....
Lime.	5	90	1,294	800	1.990
	10	45	1,565	750	2.926
	15	40	1,512	750	....

In the second experiment where much larger amounts of inorganic accelerators were employed, it was desired that the effect of the accelerator as a filler should be minimized to the greatest possible extent. This was accomplished by employing mixtures which contained zinc oxide in such an excess that from 5 to 15 per cent of an inorganic accelerator could be included in the mixture, by replacement of a similar volume of zinc oxide, without decreasing the effect, or function, of the latter substance (Table II). The sulphur content of the various mixtures was also cut down from 11 to 5 per cent, calculated upon the rubber. In this instance, and unlike the preceding experiments, the mixtures were vulcanized to maximum physical properties and their respective sulphur coefficients determined at this point. Portions of each of the mixtures were vulcanized in a platen press at 50 pounds steam pressure (298 degrees F.) over a wide range of times and the correct cure determined as the point of coincident maximum tensile strength and percentage elongation (technical cure). The sulphur coefficient of each mixture when vulcanized to this degree was then determined (Column 6, Table III).

The results obtained show that, for all three accelerators used, the best physical properties were obtained with about ten per cent of each in the mixture. The effects produced by light magnesia, heavy calcined magnesia, and lime ranked in the order named. These differences, however, were small enough to be accounted for in the value of each of these substances as a filling material. However, it is evident that the value of these accelerators as filling materials is of limited extent, because, when present in larger amount (15 per cent), in each case the vulcanized mixtures showed inferior physical properties (Columns 4 and 5, Table III). Moreover, the sulphur coefficients of the various mixtures were found not to reflect, or be a measure of, their physical properties. With both varieties of magnesia, the mixtures which contained 10 per cent of these substances were found to have lower sulphur coefficients than the mixtures which contained but 5 per cent, and the latter had lower coefficients than the control which was vulcanized without the assistance of an accelerator. On the other hand, the results obtained with lime were remarkable in that with 5 per cent of this substance, a much lower sulphur coefficient was obtained than in the case of the control, while with 10 per cent, contrary to the results obtained with magnesia, the sulphur coefficient was increased almost to that of the control.

In explanation of the results with magnesia, we have consistently found that mixtures vulcanized quickly to maximum physical properties with the assistance of accelerators invariably show lower sulphur coefficients than similar mixtures also vulcanized to maximum physical properties, but without the assistance of an accelerator. Frequently, much higher physical values are developed by those mixtures which contain accelerators. The same is true in lesser extent when a short period of vulcanization is effected by the use of higher temperatures. It is at least indicated that the time required to effect the cure of a given mixture is reflected both in its sulphur coefficient and physical properties.

CONCLUSIONS.

The physical properties of vulcanized rubber mixtures are more fully expressed in terms of the tensile strength and elongation at break than by the load required to effect an extension of 1 to 9.

When used in small amount magnesia is less active in accelerating vulcanization than certain organic accelerators, and it does not impart to the mixtures the physical improvement characteristic of the latter substances.

With mixtures which contain even small amounts of either inorganic or organic accelerators, no direct relationship exists between the sulphur coefficient and the state of cure as measured by the physical properties of the mixture.

When mixtures are vulcanized quickly, with the assistance of inorganic accelerators, the correct state of cure, as reflected by their physical properties, is obtained at abnormally low sulphur coefficients.

COLLOIDS AND RUBBER.

At a recent meeting of the Society of Chemical Industry at the University of Birmingham, Dr. D. T. Twiss spoke on the properties of the colloid state as exhibited by rubber. The following outline is condensed from the report published by "The India-Rubber Journal," January 4, 1919, page 6.

Rubber is so completely and typically colloidal that it is difficult to decide what details should be selected in order to give briefly a general indication of its colloidal character.

Natural rubber made its first appearance in a condition which might be described as doubly colloidal. Rubber latex is a milky fluid containing minute globules of a colloid, probably rubber itself in a state of colloidal suspension in an aqueous fluid or serum. These rubber globules are microscopic in size and show a distinct Brownian movement. Rubber latex is a negative suspensoid and the precipitation of rubber from *Hevea* latex exhibits analogies to the precipitation of such substances as clay or arsenious sulphide from colloidal aqueous suspension. The precipitation of negative suspensoids such as these is greatly accelerated by the addition of acids. Most of the rubber produced to-day is separated from its latex by the addition of small quantities of acetic acid.

Alkalies increase the stability of negative suspensoids, including rubber latex. Also the presence of an additional colloidal or emulsoid substance can increase the stability of the suspensoid.

Masticated raw rubber immersed in a solvent slowly absorbs the latter and swells enormously, finally yielding a colloidal solution of high viscosity. Some solvents, such as carbon disulphide, chloroform and benzene, yield almost transparent clear solutions, while others such as shale naphtha, petroleum ether and ordinary ether, yield solutions of milky appearance. Although rubber latex is closely comparable with the ordinary suspensoid colloids, rubber itself is an emulsoid. Emulsoids are, as a rule, more viscous than suspensoids, and the proportion of dispersed substance to medium is often higher.

Raw rubber may be considered as a fairly extreme case in which the rubber hydrocarbon is in a fine state of dispersion throughout a medium, probably consisting in part of the protein matter from the latex. As rubber freed from protein matter still retains its typical consistency, the emulsoid state must be attributed mainly to the presence of rubber in at least two forms of different molecular weight, or of different molecular condition, the rubber thus supplying not only its disperse phase, but also its own dispersion medium. Other peculiarities in the behavior of rubber confirm this lack of uniformity.

One of the greatest obstacles in the way of the production of synthetic rubber is the colloidal nature of the material. The problem is not merely to produce a substance of known molecular weight and structure, because the required material is of undetermined molecular magnitude and less desirable in a pure condition than when containing so-called impurities.

CHEMICAL PATENTS.

THE UNITED STATES.

PUNCTURE-HEALING COMPOSITION. A puncture-healing compound including beeswax 1 ounce, paraffine 2 ounces, rosin 2½ ounces, linseed oil ½-ounce, ground cork 2 ounces, and disintegrated asbestos 2 ounces. (Marie R. Weaber and Hermann Clemens, assignors of one-half to Otto Weydemeyer—all of El Paso, Texas. United States patent No. 1,299,273.)

THE DOMINION OF CANADA.

RUBBER SUBSTITUTE. Process and product for a rubber-like substance comprising a mixture of fixed oil, sulphur, and zinc oxide, substantially free from air and moisture, having been subjected to heat, pressure and agitation until the nascent period of the elements reacting has ceased. (Harry H. Hazeltine and Morton Gregory, both of Tacoma, Washington, U. S. A. Canadian patent No. 189,232.)

RUBBER VULCANIZATION. An accelerator for the vulcanization of rubber and similar materials, consisting of a solution of sodium or potassium in aniline or of potassium in diaphemylamine or toluidine. (The Dunlop Rubber Co., Limited, Westminster, London, assignee of Douglass Frank Twiss, Sutton, Coldfield, Warwick—both in England. Canadian patent No. 190,042.)

PROCESS AND PRODUCT OF VULCANIZING RUBBER.—A PROCESS FOR treating rubber or similar material which comprises subjecting the rubber to a vulcanizing agent comprising a nitro-derivative of anthracene (beta-dinitroanthra-quinone.) (The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. A. Gibbons, Flushing, N. Y., U. S. A. Canadian patent No. 190,352.)

RUBBER COMPOSITION. A mixture of 60 parts of rubber, 14 parts of golden antimony sulphide, and 16 parts of asbestos or mica is used for electric insulation of cables and wires, for packing glands, etc. (F. H. Bloomfield, 76 St. John's Park, Blackheath, London, British patent No. 122,310.)

THE UNITED KINGDOM.

PACKING. Joint-making rings are composed of a corrugated metal core covered with asbestos, india rubber, etc., which may be secured by vulcanization and a wrapping material, and in some cases coated with graphite. (S. A. Copeland, 24 Essex Gardens, and C. G. Alexander, 125 Rectory Road, both of Gateshead, and J. Taylor, Dunford & Co., 12 Dean street, Newcastle-on-Tyne—both in England. British patent No. 122,724.)

PLASTIC COMPOSITION. A composition resembling rubber is obtained by heating fish scrap or fish oil with sulphur, afterwards heating the product under pressure. The mixture is heated first to 175 degrees C. Afterward the temperature is raised to 220 degrees C. over a period of one to two hours. The plastic mass so obtained is mixed with more sulphur, lead oxide is added to accelerate the reaction, and the whole heated at 155 degrees C. under pressure of 20 to 40 pounds per square inch for ½ to 1 hour. The product may be used as rubber substitute or may be compounded with rubber. (M. Gregory, 2113 North Anderson street, Tacoma, Washington, U. S. A. British patent No. 123,114.)

PLASTIC COMPOSITION. Waste cork sawdust and pieces of cork, with or without refuse of tan or wood fiber, are made into a composition by addition of a mixture of alum, crude shellac, gum arabic, gutta percha, carbon bisulphide and methylated spirits. A specified composition is: alum, 4 ounces; carbon bisulphide, 1 pint; crude shellac, 8 ounces; gutta percha, 8 ounces; methylated spirits, 1 pint, combined with a proportion of the specified fibrous material. (E. Wood, 7 Sunny Terrace, Granville Road, Weymouth, Dorsetshire. British patent No. 123,285.)

IMPREGNATED TEXTILE BELTING. Textile belting is impregnated with linseed oil, asphalt, balata, etc., freed from hygroscopic substances and dried by a continuous operation. The belts are dried by heating under reduced pressure. The solvent is passed with the steam into a condenser and recovered. (E. C. R. Marks, 57 Lincoln's Inn Fields, London. British patent No. 123,502.)

LABORATORY APPARATUS.

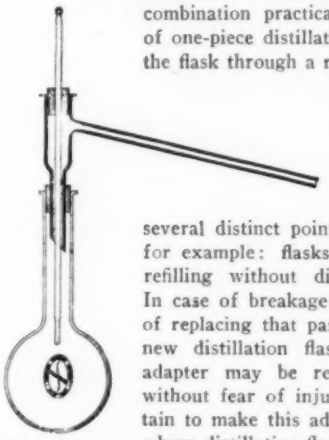
CONVENIENT WALL CLAMP.

A VERY useful wall clamp adapted for supporting such objects as maps, charts, drawings, blue-prints, fabrics, writing pads, etc., on a wall surface is shown in the annexed cut and called a "Kling-Klamp." It consists of a reversible cam to accommodate either thick or thin objects, which grips the object in proportion to its weight. The range of usefulness of this simple and inexpensive device is practically unlimited. It will be particularly appreciated by the works chemist in his office, laboratory and testing rooms. (Standard Scientific Co., 70 Fifth avenue, New York City.)

KLING-KLAMP.

DISTILLATION ADAPTER.

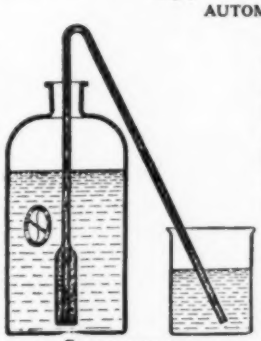
The accompanying cut illustrates the H-J distillation adapter which presents certain distinct practical advantages worthy of note. It can be readily attached to any ordinary flask, thereby adapting it for all purposes of distillation. This combination practically replaces the usual form of one-piece distillation flask. It is connected to the flask through a rubber or cork stopper, forming a tight but non-rigid joint, thus greatly lessening the liability to injury when used.



H-J DISTILLATION ADAPTER.

The separability of the adapter and flask presents several distinct points of value and convenience, for example: flasks may be easily removed for refilling without disturbing other connections. In case of breakage of flask or adapter the cost of replacing that part is less than the cost of a new distillation flask. When not in use the adapter may be removed to a suitable place without fear of injury. These features are certain to make this adapter popular in laboratories where distillation flasks are much in use. (Standard Scientific Co., 70 Fifth avenue, New York City.)

AUTOMATIC SIPHON.



STANSIPHON.

A series of practical automatic siphons covering the usual laboratory and factory requirements has been perfected as shown in the cut. These siphons are made in glass, hard rubber, and a variety of metals, according to the liquid to be used. The various models are classified as automatic or self-starting; bulb pressure attachment; bulb lift and gravity pressure, and piston pressure. (Standard Scientific Co., 70 Fifth Avenue, New York City.)

CANADIAN INSTITUTE OF CHEMISTRY.

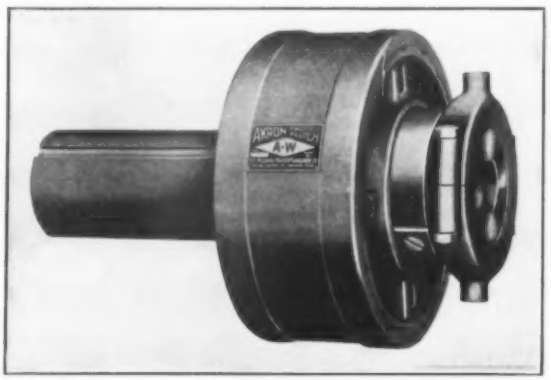
The Canadian Institute of Chemistry was organized with 28 members at the Canadian Chemists' Convention held in Montreal, Quebec, May 17, 1919. Three classes of membership are provided for. At the first session Dr. W. L. Goodwin, of the Kingston School of Mines, presided. Among the Montreal industrial plants visited by the members of the Institute was that of the Canadian Consolidated Rubber Co., Limited.

New Machines and Appliances.

THE "AKRON" FRICTION CLUTCH.

WHILE the principle of this clutch is not new, it is of interest to the rubber trade, due to the refinements of design and construction necessary to meet the demands of a reliable power-transmitting device. Its simplicity and durability make it of special advantage for rubber machinery, and particularly so when used on tire-building machines.

There is only one point to adjust, and the adjusting screw is always accessible. The clutch can be quickly adjusted to slip, when a given load is exceeded, thereby avoiding wrecking other



FRICTION CLUTCH FOR TIRE-BUILDING MACHINES.

parts of the power transmission. It takes hold slowly, reduces shock, and consequently lengthens the life of the machinery. The pulley is not a part of the clutch and is easily interchangeable. The friction parts are all of metal and run in oil; consequently, the wear on these parts is reduced to a minimum. As all working parts are enclosed in a metal case, and there are no toggle arms, levers, or other traps to fan the air and endanger operatives, it can be run at high speed with perfect safety. Made in all sizes from ¾-h. p. at 100 r. p. m., and up. (The Williams Foundry & Machine Co., Akron, Ohio.)

THE PFAUDLER UTILITY POT.

For small-scale manufacture and laboratory practice, rubber chemists will be interested in the acid-resisting glass-enameled utility pot shown in the illustration. The vessel is made with an outer jacket and its inside dimensions are: diameter 18 inches; depth 25 inches; capacity 26 gallons. It is convenient to handle, easily moved, may be raised or lowered in temperature, and is very effective in resisting acids or alkalies. (The Pfaudler Co., Rochester, New York.)

PFAUDLER UTILITY POT.

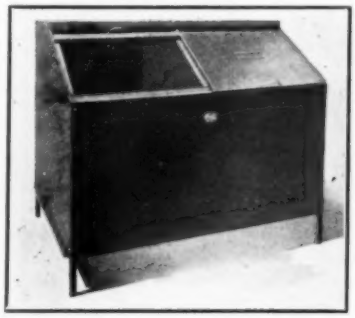
TASGON AND TAR-GON.

Two new specialties that are recommended to car-users are Tasgon and Tar-gon. Fittings that are rusted, corroded, or otherwise stuck fast may be easily removed after applying a few drops of the former. The latter removes tar, asphalt, grease and stains from automobile bodies, mud-guards, and tires. (Polygon Products Co., 141 Milk street, Boston, Massachusetts.)

STEEL TABLES AND DRY COMPOUND BINS.

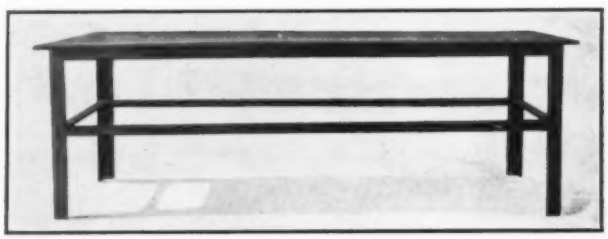
The progressive rubber manufacturer will be interested in the line of steel factory equipment here illustrated. It comprises tables, compound bins, and other factory furniture. The first cost of such equipment is practically the final cost. There is little depreciation and low insurance rate.

The dry compound bins, built in double compartment units, meet in every way the most stringent requirements for dry compound storage. Each compartment has its own cover for the protection of the contents by excluding accidental impurities.



DRY COMPOUND BIN.

The all-steel tables are perfectly adapted for holding warm or soft batches for cooling or keeping free from damage by contact with splinters of wood,

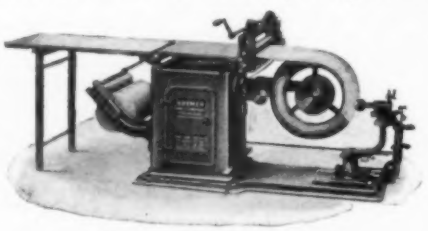


COOLING TABLE.

which are an annoying cause of trouble wherever wooden equipment is used in a rubber mill. (Charles W. Carll's Sons, Trenton, New Jersey.)

KREMER TIRE-BUILDING MACHINE.

This machine is especially designed with the view of reproducing all the essential features employed in producing a hand-made tire in a machine-made product, advantages that will be readily appreciated by any one familiar with the art of machine tire construction.



KREMER'S TIRE BUILDER.

A fabric tension device is employed that will insure uniform stretch to all the different plies of fabric alike, the desired percentage of stretch being determined at will by the operator.

The core-supporting arm rotates on its axis, whereby the core can be made to assume either a vertical or a horizontal position without affecting the rotation of the core. This feature greatly facilitates the setting of the beads, as with his arrangement the bead-setting rings are entirely eliminated.

In this machine a single spinning head is employed which stitches down the fabric in a manner similar to that of the hand-

made tire, with the result that there is no distortion of the fabric at the points where the fabric is overlapped or spliced. This difficulty frequently occurs when both sides of the carcass are spun down at the same time and in the same direction from the median line of the core.

Briefly, the operation of the machine is as follows. After the fabric has been fed to the core, the latter is rotated forward at a fast speed and the spinner held against that side of the fabric in which the warp threads extend diagonally rearward, relative to the direction of movement of the core. When one side of the fabric has been spun down, thus maintaining the proper position and tension of the warp threads, the core is stopped, the treadle depressed to unlock the core-holding arm, which is then rotated to bring the opposite side of the core into position to be engaged by the spinner. The lever handle is then operated so as to reverse the rotation of the core, and the remaining side of the fabric is thus spun down in the proper way, to preserve or produce the necessary tension on the warp threads. (F. W. Kremer, Rutherford, New Jersey.)

NON-EXPLOSIVE SAFETY CEMENT CANS.

Rubber cement is used to join together the seams of rubber footwear, clothing, hot-water bags and toys, and in the manufacture of tires, tubes, and many other rubber articles. The fumes of the solvents used in the manufacture of cements contaminate the air to the injury of the workers, and often result in serious explosions, unless carefully guarded.

SAFETY BENCH CAN.

As examples of what has been accomplished to overcome these difficulties, three types of safety bench cans for rubber cement or gasoline are presented in the accompanying illustrations. The bench can with a removable cover is provided with a floater valve which rests on the gasoline or rubber cement and allows the operator to use a light brush where a small quantity is desired. When the float is pressed down slightly the liquid is automatically forced up through the fine screen and flows back through the screen when the pressure is released. There is no danger from explosion in a can of this construction, which has the additional feature of economy in the use of gasoline. This type of can may be used for any volatile liquid in rubber mills or repair shops.

UPRIGHT AND HORIZONTAL TYPES.

The two smaller cuts illustrating, respectively, the upright and horizontal types of rubber cement pots constructed after the fashion of drinking vessels for poultry, permit only a small quantity of cement or gasoline to stand in the brush receptacle, thus minimizing the escape of fumes into the atmosphere. (McNutt Can Sales Co., Inc., 254 Church street, New York City.)

A NEW METHOD OF EXTINGUISHING FIRES.

When fires occur in chemicals, acids, or oils, they are usually marked by extremely high temperatures; so high, in fact, that water, even where it can be made to stay on the surface of the fire, is unable to extinguish it by cooling, as it is immediately vaporized by the heat and the vapor blown away by the wind or sucked away by the draft of the fire itself. But in most cases the water, being heavier than the liquid, sinks to the bottom, where it can do no good. In fact, it usually does harm, as it spreads the burning liquids over a larger area.

FIREFOAM ENGINE.

HAND EXTINGUISHER.

The method here described utilizes the well-known smothering ability of carbonic-acid gas. But in this method the gas is not left free to be blown away, but is held on the surface of the burning substance in the form of very minute bubbles in which the carbonic-acid gas is confined. This mass is said to be an almost perfect non-conductor of heat. It is lighter than liquids and, consequently, floats on them. If spread entirely over the surface it must cut off the supply of oxygen completely and quickly smother the blaze. When applied to solid substances it coats the surface and kills the fire by preventing air from reaching it. (Foamite Firefoam Co., 200 Fifth avenue, New York City.)

PORTABLE AIR COMPRESSORS FOR TIRES.

This new outfit consists of a one-half horse-power electric air compressor, having a capacity of two cubic feet of free air per minute, together with a cylindrical pressed steel reservoir, 14 inches by 30 inches, mounted on three wheels and provided with a handle, so that the whole can be wheeled about as circumstances require. The reservoir holds sufficient air at one filling to inflate five average tires from flat to full pressure or ten tires from 40 to 80 pounds. The outfit is complete with switch, electric cable, attachment plug, pressure gage, safety valve, 25 feet of hose, tire connector, and all necessary piping and wiring. The motor operates on alternating current of 60 cycles or less and direct current. The motor, gear train and compressor are enclosed in one housing. The motor and compressor are cooled by forced circulation of air through this common housing, and the motor, gears and compressor, including cylinder walls and piston, are grease-lubricated. (Black & Decker Manufacturing Co., Baltimore, Maryland.)

PORTABLE AIR PUMP.

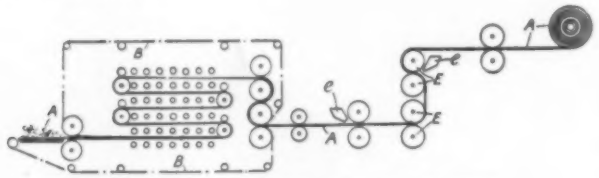
MACHINERY PATENTS.

COMPRESSED ASBESTOS SHEET PACKING.

DUE to the elimination of German competition, the manufacture of asbestos sheet packing of the Klingerit type is becoming an important division of rubber goods manufacture.

The process here illustrated relates to the continuous manufacture of joint-making material and consists in applying to one or both faces a surfacing material of finer quality or of different color.

The material A, formed from a plastic composition of rubber and asbestos compressed and dried in any manner, such as between endless bands B as described in British patent No. 121,772, receives surfacing material from a hopper *e* on one or both faces and passes to calendering rolls E which may be heated to drive off solvent.

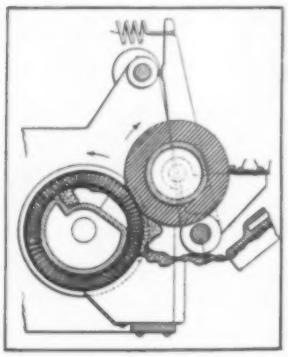


MACHINE FOR MAKING ASBESTOS PACKING.

From the calender, the sheet passes between presser rollers and is wound up on the roller *A* shown at the right of the illustration. (Potter's Asbestos Co. and A. E. Stafford, Rochdale, Lancashire, England. British patent No. 121,904.)

CHICLE GUM-STRAINING MACHINE.

In the operation of this machine the melted chicle containing the foreign matter flows in a continuous viscous stream from the chute down onto the surface of the rotating cylinder and is carried thereby under the rubber roller, the pressure of which squeezes the gum through the screen and perforations into the interior of the cylinder.



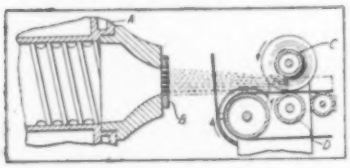
CHICLE STRAINER.

From the interior of the cylinder the gum is gathered by a spiral scraper and caused to flow out of the open end of the cylinder through a hole in the plate, to the discharge spout.

The cylinder and scraper are heated to the required degree to facilitate this flow of the gum without heating it too hot. The impurities in the gum are not forced through the screen into the cylinder, but are picked up by the comparatively cold and more sticky yielding surface of the rubber roller and carried thereby until they are collected from the surface of the roller by the scraper at the top. (Karl E. Peiler, assignor of one-ninth to himself, two-ninths to William A. Lorenz, both of Hartford, Connecticut; and six-ninths to Beechnut Packing Co., Canajoharie, New York. United States patent No. 1,296,112. See United States patent No. 1,296,096.)

MACHINE FOR MAKING RUBBER STOCK.

Rubber stock may be built up of laminated strips, and entrapped fluids removed by this process. The machine illustrated is designed to produce solid tire stock, and comprises an ordinary tubing machine *A* provided with a laminating die *B* through which the separated strips are forced and conveyed between compression rollers *C* and *D*.

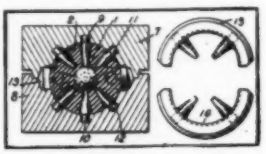


SOLID-TIRE-STOCK MACHINE.

Pressure being applied to the mass in the tubes when the strips are extruded through the die into a region of lower pressure, the gases are excluded. Furthermore, as the strips pass between the compression rollers, any remaining gas-pockets are broken and all hollows are flattened out so that the stock leaves the rolls free of pockets and entrapped fluids. (Thomas P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,297,482.)

MAKING GOLF BALLS.

This patent relates to apparatus for molding elastic material and particularly golf or like balls of the form described in British patent specification No. 120,658. The mold sections 7, 8, 13, 14 are provided with tapering radial pins 9 .. 14 which converge to a common center and are symmetrically disposed. Some of the pins may be long enough to support a hard core (1) to be embedded in the material (2) of the ball. In the construction shown, the mold consists of four sections, two (13, 14) of which form the equatorial part of the ball. When molded, the material is drawn off the pins, and the ball is completed as described in the above-mentioned specification. The mold may be used for a rubber composition, which is vulcanized therein, or for a composition which can be poured into the mold and allowed to set. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [Revere Rubber Co., 59 Reade street, New York City.] British patent No. 121,239.)



GOLF-BALL MOLD

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,297,765. Retread Vulcanizer. P. H. Wilkinson, San Bernadino, Calif.

1,298,124. Tire-building machine. W. C. Tyler, Racine, Wis., assignor to The Goodyear Tire & Rubber Co., Akron, O.

1,298,612. Repair vulcanizer. C. T. White, Santa Barbara, assignor of ½ to G. E. White, Santa Cruz County, and ½ to W. E. Mouck, Santa Barbara County—all in California.

1,298,620. Repair vulcanizer. J. H. Wright, Lebanon, Mo.

1,298,644. Apparatus for the manufacture of electric cables. C. J. Beaver and E. A. Claremont, County of Chester, England.

1,298,945. Expansible core for vulcanizing tires. J. P. Smith, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.

1,299,335. Edge-trimming machine. R. Hazeltine, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,299,399.—Device for stripping lasts from boots. J. J. Kramer and H. Smerling, assignors to La Crosse Rubber Mills Co.—all of La Crosse, Wis.

1,299,456. Apparatus for forming duplicate tire molds. B. Branville, New York City.

1,299,497. Machine for shaping tire covers. F. H. Mercer and H. F. H. Blease, Melksham, England.

1,300,341. Tool-mounting for tire-machines. J. L. Butler, Akron, O., assignor to The B. F. Goodrich Co., New York City.

1,300,391. Core for tire casings. C. D. Hibbs, Fort Worth, Tex.

THE DOMINION OF CANADA.

189,916. Machine for shaping tire covers. F. H. Mercer and H. F. H. Blease, Melksham, England.

189,960. Tube-wrapping machine. O. E. Heckman, Akron, O., U. S. A.

189,986. Mold for forming tires. W. D. McNaull, Toledo, O., U. S. A.

190,005. Rubber-coating machine. A. Schwartz, Brookline, Mass., U. S. A.

190,033. Tire-wrapping machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of C. B. Whittelsey, Hartford, Conn., U. S. A.

190,336. Machine for operating on heels having both leather and rubber parts. The United Shoe Machinery Co. of Canada, Limited, Maisonneuve, Quebec, assignee of J. F. Standish, Winthrop, Mass., U. S. A.

THE UNITED KINGDOM.

123,068. Machine for deflating pneumatic tires. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted.)

123,136. Apparatus for making solid tires. Henley's Telegraph Works Co. and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.

123,137. Apparatus for trimming solid tires. Henley's Telegraph Works Co. and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.

123,138. Apparatus for trimming solid tires. Henley's Telegraph Works Co. and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.

123,414. Machine for covering wires with plastic material. A. J. Welch, 13 Woodland Terrace, Old Charlton, London.

123,636. Tire mold. E. Hopkinson, 1790 Broadway, New York City, U. S. A.

PROCESS PATENTS.

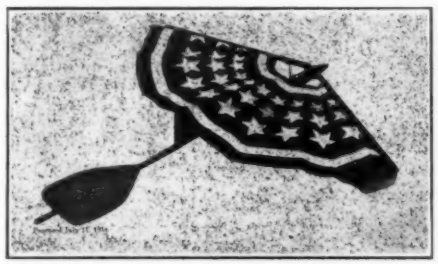
THE DOMINION OF CANADA.

NO. 190,045. To manufacture endless inner tubes. The Mercer Tire Co., assignee of H. Dech—both of Trenton, N. J., U. S. A.

New Goods and Specialties.

A TOY MONOPLANE THAT SOARS.

THE interest in airplanes has stimulated the production of toys for the youngsters that shall have some of the characteristics of the real airplane. The one shown in the accompanying illustration, called the "Joy-Toy Soaring Monoplane," will ascend straight into the air for more than 100 feet and spiral back to the feet of the sender. It has wings of tough paper supported by light metal stays on hardwood doweling, and these wings fold up like a fan. A light spring holds them in position when spread. A strong sling or catapult has a broad rubber band with a ring for attaching to the monoplane, and the height to which the plane ascends depends on the power given it by the force exerted on this sling. The small sketches show the means of attaching the



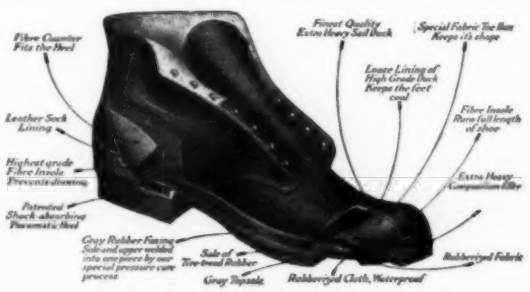
THE JOY-TOY SOARING MONOPLANE.

sling and the position in which the monoplane is held when sending it into the air. The air resistance holds the wings closed until the plane has reached the top of its flight, when they automatically spread open. The direction of the toy can be regulated by adjusting the rudder, which is detachable. (The Evanston Supply Co., 118 North La Salle street, Chicago, Ill.)

A WORK-SHOE WITH RUBBER SOLE.

The tremendous increase in the cost of footwear has opened the way for the popularization of a work-shoe that can be marketed at a reasonable price, and that will give good value for the money paid. A shoe which answers the requirements is illustrated here in so graphic a manner as to require but little further description.

It has an upper of heavy brown canvas, with a lining of lighter duck, a sole of tough rubber, a fiber counter and insole, and a resilient box-toe. The rubber heel is of pneumatic construction, with several specially constructed chambers which draw in and eject air at every step, thus being lighter and more

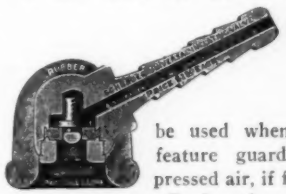

Fibre Counter Fits the Heel
Finest Quality Extra Heavy Sail Duck
Special Fabric Toe Butt Keeps it's shape
Leather Sock Lining
Loose Lining of High Grade Duck Keeps the feet cool
Fibre Insole Runs full length of shoe
Highest grade Fibre Insole Prevents slanting
Extra Heavy Composition Filler
Patented Shock absorbing Pneumatic Heel
Gray Rubber Facing
Sole of Tire-tread Rubber
Rubberized Fabric
Gray Topsole
Rubberized Cloth, Waterproof

THE HOOD "WURKSHU."

resilient than the ordinary rubber heel. The shoe is made on the Munson last, the shape approved by the Government for its Army shoes, in regular lace, blucher, and scout patterns, for men, boys and youths, women, misses, and children. It is in all a most desirable shoe for the purposes intended. (Hood Rubber Co., Watertown, Massachusetts.)

AN AUTOMATIC INFLATING VALVE.

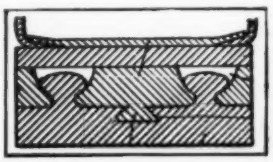
A new valve for use in garages and service stations is covered with rubber to protect it from injury and at the same time prevent it from scratching or injuring the body of the automobile near which it may be used when inflating tires. An automatic feature guards against the escape of compressed air, if for any reason the supply is not cut off when the use of the valve has ceased. This valve is made in four sizes from 5/16-inch to ½-inch, and a patent has been applied for on the device. (A. Schrader's Son, Inc., 783-803 Atlantic avenue, Brooklyn, New York.)



"SCHRADER UNIVERSAL INFLATING VALVE."

DETACHABLE RUBBER HEEL.

A cushion rubber heel made in two layers or lifts, on the principle of the mortise-and-tenon joint, is shown in the accompanying sketch. One of the layers is permanently attached to the heel of the shoe, and the other, being detachable, is easily replaceable when worn. The two rubber parts may be made of two grades of rubber if desired, the upper one receiving less wear than the tread member. The inventor who has patented the idea calls attention to the possibility of utilizing it in applying a rubber facing to the sole or a portion of the sole of a shoe. (Walter H. Clarke, Akron, Ohio.)



CLARKE RUBBER HEEL.

A WESTERN NON-SKID TIRE.

The tire shown herewith uses a double diamond tread to produce its non-skid feature. This tire is of the clincher type and is a new brand being manufactured by a western concern. It is called the "South Bend" tire. (International India Rubber Corp., South Bend, Indiana.)

A SPONGE-RUBBER TIRE FILLER.

A new substitute for the customary pneumatic tube in automobile tires is made of sponge rubber produced by a special process which toughens it to withstand hard wear. The "Rubber Ace," as it is called, is manufactured in different sizes to fit various tires. It is claimed for this tire filler that it will not harden or crumble and will retain its resiliency, while it is not affected by natural heat or cold. The manufacturer guarantees its invention for one year. (Lafayette Rubber Co., 6100 South La Salle street, Chicago, Illinois.

"RUBBER ACE" TIRE FILLER.

A RUBBER-LINED CASE FOR BOTTLES.

Those who are constantly traveling and require a water-proof case for bottles should be interested in the one illustrated here. It is made in two styles, one of black patent leather and the other of tan pig goat-skin, lined with a checked water-proofed fabric. The bottles which come with the case are of glass in nickel holders with a removable cap. (Mark Cross, 404 Fifth avenue, New York City.)

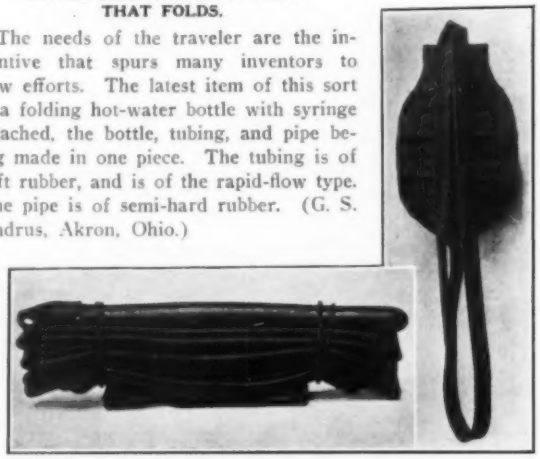
RUBBER-LINED BOTTLE-CASE.

"TEST SPECIAL" RUBBER BELTING.

A new kind of belting for machinery is made of specially woven cotton duck, thoroughly impregnated with rubber, and vulcanized under pressure sufficiently heavy to unite the plies and make the belt impervious to moisture. This type of belt is also non-stretching, an important feature. (New York Belting & Packing Co., New York City.)

NOVEL HOT-WATER BOTTLE THAT FOLDS.

The needs of the traveler are the incentive that spurs many inventors to new efforts. The latest item of this sort is a folding hot-water bottle with syringe attached, the bottle, tubing, and pipe being made in one piece. The tubing is of soft rubber, and is of the rapid-flow type. The pipe is of semi-hard rubber. (G. S. Andrus, Akron, Ohio.)



FOLDING HOT-WATER BOTTLE AND SYRINGE.

REGENT KEDS—A NEW LINE OF SUMMER FOOTWEAR.

A new line of "Keds" called the "Regent" has recently appeared, designated as of higher grade than the ordinary rubber-soled canvas footwear and priced accordingly. The models are made of white Sea Island duck and have white rubber soles. The heel varieties are made with a combination steel and fiber shank to support the arch of the foot, and there is a ground cork filling between the fiber insole and the rubber outsole to prevent the foot from coming in close contact with the latter. The sole is vulcanized to the upper by the pressure-cure process. Half Louis heel pump and 9-inch Bal, rubber lifts on heels; 8-inch Bal, misses' pump, and men's Bal and Oxford, rubber heels.

HALF LOUIS HEEL PUMP.

WOMEN'S 8-INCH BAL.

MISSES' PUMP.

INFANT'S OXFORD.

MEN'S OXFORD.

INFANT'S BOOT.

WOMEN'S 9-INCH BAL.

MEN'S BAL.

The line includes a number of models not shown above, including Oxfords and Bals for men and women and an infant's ankle-strap pump. (The United States Rubber Co., New York City.)

A "MINNOW" BAIT FOR BASS.

For deep-water fishing, especially for bass in mid-summer, in northern lakes, a new "plug" has been devised which sinks and dives and has an active swimming or wiggling movement, enhanced by a rubber "pork rind" attachment. This bait has a double-hook equipment, weighs only 2/3-ounce, and is 2½ inches long. It is made in four color combinations, one being a red-scale finish. (James Heddon's Sons, Dowagiac, Michigan.)

THE HEDDON "DEEP-O-DIVER" BAIT.

A NEW SWIMMING GLOVE.

A swimming glove intended to prevent the entrance of water between the glove and the hands of the swimmer, has its outer edge provided with a continuous web formed with a flange which connects, by means of ribs, with the fingers. When the fingers of the hand are spread, the spaces between act like the web of a duck's foot to resist the water and thus offer an effectual means of making progress.

ECKMAN SWIMMING-GLOVE.

The glove is formed of elastic material, preferably rubber, and the wrist portion has a rubber band at its outer end to prevent the entrance of water. When the fingers are brought together, the resistance to the water is very slight during the return swimming stroke. The glove is easily adjusted. (John W. Eckman, Decatur, Illinois.)

VACUUM CLEANER WITH RUBBER BELT.

An electrically driven vacuum cleaner is pictured here, having a ¼-inch round driving belt of rubber and rubber-tired wheels at front and back. The belt drives the spiral brush direct from a simple and durable large carrier wheel. This brush is divided and by its wide opening, the end vents, and the large center vent, it is possible to clean dust from baseboard cracks and pick up pieces of strong and larger articles of rubbish without the inconvenience of getting them wound around the brush. The brush itself is adjustable to suit the special requirements of the surface to be cleaned. This adjustment is facilitated by the special attachments which come with the cleaner.

"AMERICA" CLEANER.

This motor has a trip-lever, foot-operated, for starting and stopping. All of the electrical connections are contained in the motor housing and the handle is of non-shock-enameled wood. This handle can be adjusted and fastened at any desired angle. (The Wise-McClung Manufacturing Co., New Philadelphia, Ohio.)

AN ADJUSTABLE CRAVAT.

Dealers in men's furnishings will be interested in a new type of cravat called the "Tieze." The particular feature is the substitution of a strip of elastic webbing for the narrow strip of material which passes around the back of the collar. When a cravat having this elastic insert is put in position to be tied, the elastic permits it to be drawn down and knotted with ease. It can then be released and will adjust itself snugly. Another specialty of novel interest made by the same company is

"TIEZE" CRAVAT.

A WEIGHTED RUBBER SOLE.

One of the disadvantages of the life-saving suits of the modern type is that the heavy metal soles of the feet have no resiliency and possess a tendency to bend beneath the weight of the wearer if he happens to step on some hard object, such as a stone under water.

To overcome this handicap a new sole has been devised, made of rubber heavily compounded with litharge. The inner side is of fabric, like the interior of a rubber boot. This is known as the "High Gravity Sole." The "Dreadnaught" safety suit described in our issue of October 1, 1918, is said to be equipped with these weighted rubber soles.

The "High Gravity Sole" and the "Tieze" cravat are the product of the same inventor. (Bull's Eye Rubber Co., 131-135 Harris avenue, Long Island City, New York.)

A TRUCK TIRE THAT WITHSTANDS STRAIN.

A truck tire is represented in the accompanying illustration which is made with base, sub-base, and tread fused in one piece by a special process. The channel lips of the base are shorter than in some types of solid tires, but it is claimed by the manufacturer that the bond between the rubber and the steel rim is so strong that a laboratory test in which 100 tons hydraulic pressure were exerted against the unsupported tire-walls failed to dislodge the tread. At the same time, although the tire was much distorted during the test, it regained its normal size and shape when the pressure was removed. (The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio.)

MCGRAW SOLID TIRE.

BLACK AND WHITE IN COMBINATION.

Nearly all the rubber footwear manufacturers are now producing lines of white rubber, which seem to have caught the fancy of the public. The various standard styles and shapes are being duplicated in white.

A decided novelty in this line, however, is the "Lytton," a lumberman's shoe with white rubber upper, heel, and sole, and black leather top and white celluloid eyelets. The upper and top are attached by four rows of stitching, and the whole forms an article which commends itself by its novelty and attractiveness. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.)

"LYTTON" LUMBERMAN'S SHOE.

Activities of The Rubber Association of America, Inc.

MEETING OF THE BOARD OF DIRECTORS.

THE QUARTERLY MEETING of the Board of Directors was held at the Union League Club, New York City, May 9, 1919, with the following attendance:

Homer E. Sawyer, president. Directors: Harry T. Dunn, Seneca G. Lewis, John Morgan, John A. Lambert, William J. Kelly, John S. Lowman, Charles J. Davol, C. W. McLaughlin, G. W. Henne. Former presidents: Henry C. Pearson, Frederic C. Hood, George B. Hodgman. Secretary, H. S. Vorhis. Also by special invitation, Colonel H. Stuart Hotchkiss.

It was voted to purchase $10,000 of Victory Loan notes and to appropriate $5,000 toward supporting the work of the National Industrial Board, of which the Association is a member.

The following firm and associate members were elected:

FIRM MEMBERS AND REPRESENTATIVES.

The Archer Cord Tire & Rubber Co., W. F. Bigelow, Minneapolis, Minnesota.

Curtis Tire & Rubber Co., Curtis R. Gray, Muskegon, Michigan.

Lincoln Highway Tire Co., M. S. Ackles, Fulton, Illinois.

Monarch Rubber Co., G. F. Kline, Canton, Ohio (factory at Hartville, Ohio).

Semple Rubber Co., C. H. Semple, Trenton, New Jersey.

Standard Tire Co., R. J. Firestone, or T. A. Palmer, Willoughby, Ohio.

ASSOCIATE MEMBERS.

W. A. Eden, Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.

The associate membership of E. O. Cummings was transferred to firm membership in the name of W. H. Cummings and Sons, 60 Harrison street, New York City.

ASSOCIATION REPRESENTED AT CHAMBER OF COMMERCE MEETING.

The seventh annual meeting of the Chamber of Commerce of the United States of America held at St. Louis, April 28 to May 1, 1919, brought together 2,500 business leaders from all parts of the country and was one of the most important gatherings of this nature ever held. Among other resolutions, the following that is of particular interest was adopted:

NO. 11—HIGHWAYS.

That highways are an integral part of our nation's system of transportation has been emphasized by the war, and an enormous development is at hand, so important as to require a comprehensive national policy, under which federal appropriations for highways will be applied to national needs for interstate commerce, agriculture, postal delivery, common defense and general welfare.

Frank A. Seiberling is chairman of the Highways Committee, which has given this question extended study. Mr. Seiberling and Secretary Vorhis were delegated to represent the rubber industry.

NEW CLASSIFICATION OF RUBBER EXPORTS AND IMPORTS.

That the industry may be better informed concerning rubber exports and imports, the Bureau of Foreign and Domestic Commerce has adopted the following classification schedules for use in the monthly summaries published by the Department of Commerce.

EXPORT SCHEDULE.

40. RUBBER AND RELATED GUMS AND MANUFACTURES OF.

Code No.	CLASS AND COMMODITY.
	401. Rubber, reclaimed, scrap and old, fit only for manufacture.
4011.	Reclaimed.
4012.	Scrap and old.
	403. Boots and Shoes.
4031.	Boots.
4032.	Shoes and overshoes.
4039.	Canvas shoes with rubber soles and all other rubber shoes, n.e.s.
	404. Druggists' sundries and medical and surgical goods. (This will include: air goods, including bed pans, beds, cushions for invalids, operating cushions, life preservers and pillows, water bottles and bags, fountain and bulb syringes, sets and atomizers; sheets and sheeting, including hospital sheeting, blankets, pillow cases, bandages, aprons, basins, bath tubs; miscellaneous goods and catheters, finger-cots, surgeons' gloves, pouches, sponges, stoppers, torniquets, tubes, tubing, urinals.)
	405. Hard rubber goods, including electrical supplies, combs, etc.
4051.	Battery jars and covers.
4052.	Electrical supplies and other than battery jars.
4053.	Combs and other hair goods.
4059.	All other (sheet, moldings, pipe stems, rods and tubes).
	406. Tires and tire tubes.
4061.	Pneumatic casings for automobiles.
4062.	Pneumatic casings, all other (bicycle, motorcycle and aeroplane).
4064.	Pneumatic tubes for automobiles.
4065.	Pneumatic tubes, all other (bicycle, motorcycle, airplane).
4067.	Solid tires—automobile and motor truck tires.
4068.	Solid tires—all other.
	407. Waterproof cloth and clothing (rubberized).
4071.	Waterproof cloth, including carriage cloth and auto topping (rubberized).
4072.	Waterproofed wearing apparel (rubberized). (For waterproof clothing not rubberized, see "Textiles 20, 21, 26, 27.")
	409. Other manufacturers of rubber.
4091.	Belting, including transmission, conveyor and elevator belting of rubber or balata.
4092.	Hose, including braided, molded, cotton rubber-lined, wire wound, air-brake, fire, garden, submarine, vacuum, steam, suction, water, car-heating, and lining or cotton jacket for cotton rubber-lined hose.
4093.	Packing.
4094.	Soles and heels.
4095.	Rubber thread.
4099.	All other rubber goods (including brake linings, buffers, cord, friction tape, gaskets and washers, gasket tubing, splicing compound, mats, matting, mold work, roll covering, rubber springs, tubing, valves, cables, cement, insulating compounds, etc.).

IMPORT SCHEDULE.

40. RUBBER AND RELATED GUMS AND MANUFACTURES OF.

Code No.	CLASS AND COMMODITY.
	400. Rubber, crude or unmanufactured.
40010.	Rubber, crude, wild.
40020.	Rubber, crude, plantation.
40030.	Guayule.
40040.	Jelutong.
	401. Rubber, reclaimed and scrap, fit only for remanufacture.
40110.	Reclaimed.
40120.	Scrap and old.
	402. Guttas and chicle—crude or unmanufactured.
40210.	Balata.
	Chicle:
40221.	Crude.
40222.	Refined.
	(For chewing gum—see confectionery.)
40230.	Gutta percha.
40240.	Gutta siak.
40290.	Other guttas.
40300	Boots and shoes (includes boots, shoes and overshoes, and canvas shoes with rubber soles).
40400.	Druggists' sundries and medical and surgical goods. (This will include: air goods, including bed pans, beds, cushions for invalids, operating cushions, life preservers and pillows; water bottles and bags, fountain and bulb syringes, sets and atomizers; sheetings, including hospital sheetings, blankets, pillow cases, bandages, aprons, basins, bath tubs; miscellaneous goods and catheters, finger-cots, surgeons' gloves, pouches, sponges, stoppers, tourniquets, tubes, tubinge and urinals.)
40500,	Hard rubber goods, including electrical supplies, combs and other hair goods, sheet mouldings, pipe stems, rods and tubes.
40600.	Tires and tire tubes.
	407. Waterproof cloth and clothing (rubberized).
	Waterproof cloth, including carriage cloth and auto topping (rubberized).
40711.	Composed of cotton or other vegetable fiber of which cotton is the material of chief value.
40712.	Composed of silk, etc.
40713.	Composed of wool or mohair, etc.
40714.	Waterproof wearing apparel (rubberized). (For waterproof clothing not rubberized, see "Textiles.")
40721.	Composed of cotton or other vegetable fiber, or of which cotton is the material of chief value.
40722.	Composed of silk, etc.
40723.	Composed of wool or mohair, etc.
40724.	Composed of linen, hemp, or ramie.
	409. Other manufactures of rubber.
	Belting, including transmission, conveyor and elevator belting containing rubber or balata.
40920.	Hose, including braided, molded, cotton rubber-lined, wire-wound, air-brake, fire, garden, pneumatic, submarine, vacuum, steam, suction, water, and lining or cotton jacket for cotton rubber-lined hose.
40930.	Packing.
40940.	Soles and heels.
40950.	Rubber thread.

40990. All other rubber goods (including brake linings, buffers, cord, friction tape, gaskets and washers, gasket tubing, splicing compound, mats, matting, mold work, roll covering, rubber springs, tubing, valves, cables, cement, insulating compounds, etc.).
(For insulated wire—see "Wire.")

OUTING DATE CHANGED.

The Outing Committee announces that in order to secure the desired accommodations the annual outing will be held on June 24, 1919, instead of June 17, as previously announced. The place will be the Seaview Golf Club, at Absecon, adjoining Atlantic City, New Jersey.

The Outing Committee is extremely fortunate in securing one of the finest and best equipped clubs in the country for the outing, and in a location that will be central for the entire membership.

OTHER MANUFACTURERS AGREE TO CRUDE RUBBER CHARGE.

The following manufacturers have signed the agreement to pay the Rubber Association 3 cents per 100 pounds on all crude rubber purchased by them:

Cortland Tire & Rubber Co.
Dreyfus Co., L. A.
Duratex Co., The.
Eureka Rubber Manufacturing Co., Inc.
Pioneer Rubber Mills.
Polson Rubber Co., The.
Schacht Rubber Manufacturing Co.
Zee-Zee Rubber Co.

OVERLAND FREIGHT RATES REDUCED.

George F. Hichborn, chairman of the Traffic Committee, announces that transcontinental rates from the Pacific coast on carloads of crude rubber have been reduced to $1 per hundredweight and to $2.25 per hundredweight in less than carloads, these rates effective May 29, 1919.

EXECUTIVE COMMITTEE OF TIRE DIVISIONS DISCUSS EXCISE TAXES.

A joint meeting of the Executive Committees of the Pneumatic and Solid Tire Manufacturers' Divisions was held May 14, 1919, at 52 Vanderbilt Avenue, New York City, A. G. Partridge presiding. The following were present:

George M. Stadelman, chairman, Pneumatic Tire Manufacturers' Division; A. G. Partridge, chairman Solid Tire Manufacturers' Division; H. C. Miller, Joseph C. Weston, W. W. Duncan, Maurice Switzer, T. S. Lindsey, A. H. Peterson, Horace De Lisser, R. T. Griffiths, Seneca G. Lewis, John A. Kearns, J. E. Baum, and H. S. Vorhis, secretary; by special invitation, M. L. Heminway and W. C. Arthur.

The following members of the Special Committee on the Excise Tax on Tires and Tire Accessories were present: F. C. Van Cleef, Bernard M. Robinson, Kennedy M. Thompson, C. L. Landon, and J. C. Weston.

Important matters relating to the excise taxes on tires and accessories were discussed and definite action taken toward modifying certain features.

It was voted that the Excise Tax Committee be increased from seven to twelve members and that the following companies be invited to name representatives: Ajax Rubber Co., Inc., Hood Rubber Co., Lee Tire & Rubber Co., Empire Rubber & Tire Corp., General Tire & Rubber Co.

Horace DeLisser was appointed a member of the Executive Committee of the Pneumatic Tire Manufacturers' Division, succeeding H. L. McClaren, resigned.

The next meeting of the Pneumatic Tire Manufacturers' Division and the Solid Tire Manufacturers' Division will be held at the Hotel Chalfonte, Atlantic City, New Jersey, June 23, 1919, at 2.30 p. m.

COMMENT ON TREASURY REGULATIONS RELATING TO EXCISE TAXES ON TIRE AND TIRE ACCESSORIES.

May 14, 1919.

To firm members of The Rubber Association of America:

The special committee appointed in the matter of the Federal excise tax on the sales of tires, inner tubes, parts and accessories, submits the following comment with reference to Regulations 47 approved under date of May 1, 1919, by the Treasury Department, a copy of which regulations is sent you by this mail. Of these regulations the following articles affect particularly the manufacturer of automobile tires, inner tubes, parts and accessories, and should be carefully studied by every such manufacturer:

ARTICLES 1-16, INCLUSIVE. ARTICLES 34-52, INCLUSIVE.

Certain of these articles seem to require special comment or explanation, since they appear to be in either real or apparent conflict with a portion of the contents of the letter of March 11, 1919, issued by The Rubber Association. Treasury Department Regulations 47, taken in connection with the contents of this letter, should be considered as superseding and replacing the letter of March 11, 1919.

I. BASIS OF TAX.

ARTICLES 3, 4 AND 34 OF REGULATIONS 47.

It is recommended that the tax be billed as a separate item and not included in the price of the article. Articles 3 and 4 of Regulations 47 stipulate the method to be followed in determining the basis on which the tax is to be computed. As stated in article 34, the tax on sales at wholesale is based on the actual price for which the article is sold, and on sales at retail is based on the average price at which the manufacturer sold the same article at wholesale during the preceding month. No cash discounts can be deducted in computing the price on which the tax is payable.

The law requires that as to wholesale sales, taxes shall be collected on the actual amount of the sale price. Many manufacturers have two or more wholesale prices, as for instance manufacturers who sell at one price to jobbers and distributers, and at another price to retail dealers. Thus if a manufacturer sells a given tire for $50 to a jobber, the tax would be $2.50, but if the same tire were sold to a dealer for $60, the tax would be $3. Thus, this same tire from this same manufacturer would, if sold through the dealer at $60, get to the consumer with $3 tax, but if sold at $50 through the jobber, it would get to the consumer with a $2 tax. The many disadvantages to the manufacturer of such a course and the obvious unfairness to the dealer are quite apparent.

Therefore, in order that the tax paid by the consumer on products of rubber manufacturers may be uniform in each case, regardless of whether the goods are distributed by a manufacturer direct to a dealer or through the intermediate channel of a jobber or distributer, it is suggested that all products of rubber manufacturers sold to the wholesale trade be sold on the same price base and that in the case of jobbers or distributers to whom extra discounts are allowed in fact not as discounts on the sale price of the article, but as reimbursement for storage, delivery and other services rendered in behalf of the manufacturer, such extra discounts be regarded as a commission or service payment to the jobber, and that they be paid by the issuing of a credit memorandum to the jobber, or by other suitable method which will make the extra discount transaction with the jobber or distributer one separate from the sale of the article.

Commissions to agents and other expenses of sale are not deductible from the price. If articles are sold at the factory and the freight charges from the factory to the point of delivery are paid by the buyer as a specific item, or if they are sold delivered at a sum less freight charges to be paid by the purchaser, such charges need not be included as part of the price of the goods; but if the manufacturer sells goods at a delivered price and himself pays the freight, he is not entitled to make any deduction on account of the inclusion in the price of freight charges. If the price of an article is increased to cover the tax, the tax is on such increased price.

II. ADJUSTMENTS, REPLACEMENTS AND EXCHANGES.

ARTICLE 5 OF REGULATIONS 47.

Where adjustments, exchanges or replacements of tires and tubes are made by the manufacturer thereof with others than the manufacturers, producers or importers of the automotive vehicles enumerated in the Section 900, Subdivision 1 and 2 (except where the goods were not originally tax-paid—see second paragraph below), the tax charged the customer should be computed on the exact amount, if any, paid by the customer for the tires and tubes delivered by the manufacturer in making the adjustment, exchange or replacement. Thus, where a customer returns for adjustment a $50 tire and the manufacturer gives the customer a $50 tire, allowing $25 for the old tire, and receives from the customer a differential of $25 for the new tire given in adjustment, the tax charged to the customer should be $1.25 or 5 per cent of the $25 (the amount paid by the customer).

In opposition to the former verbal ruling of which you were advised on page 6 of the letter of March 11, 1919, the Treasury Department has now ruled that where tires and tubes, on which at the time of the original sale the tax was not paid, are adjusted, exchanged, or replaced, the tax to be then paid shall be based on the full price of the tire or tube delivered in the adjustment, replacement or exchange. Thus, if a $50 tire sold prior to February 25, 1919, were presented for adjustment in March, 1919, and replaced by a $50 tire for which the manufacturer received $25, a tax of $2.50 (i. e., 5 per cent of $50 instead of 5 per cent of $25, the price received) must be paid to the Government.

It appears to this committee quite impracticable and impossible for tire manufacturers to determine whether or not tires and tubes returned for adjustment were or were not tax-paid at the time of their original sale

by the manufacturer. Hence, this committee is taking immediate steps to effect if possible a return by the Treasury Department to its original ruling, under which the tax returnable on all adjustments, exchanges or replacements, regardless of whether the original sale was made before or after February 25, 1919, shall be based on the exact amount, if any, paid to the manufacturer by the customer for the article given in adjustment, replacement or exchange.

III. TAXABLE PURCHASES BY TIRE AND TUBE MANUFACTURERS.

ARTICLES 6 AND 7 OF REGULATIONS 47.

Although as pointed out in paragraph VI hereof, the sale of tires, tubes, and accessories to automotive vehicle manufacturers is tax-exempt, it is not true that this exemption applies to cases where taxable parts or accessories are sold by the manufacturer of such parts or accessories to the manufacturers of tires and tubes, or accessories.

Thus where the tire or tube manufacturer buys articles such as rims, tires, pumps, etc. (i. e., articles which are, at the time of purchase, in such condition as to be usable for the performance of their intended functions), a tax must be originally paid to the Government by the manufacturer of the part or accessory. If in such a case the tire or tube manufacturer both (a) reimburses the part or accessory manufacturer for this tax, and (b) resells the part or accessory as a component part of an article which he manufactures, the tire or tube manufacturer may claim credit from the Government for the amount of such tax so reimbursed. The tire or tube manufacturer must, however, return to the Government an amount of tax based on the price for which he subsequently sells the taxable article of his manufacture of which said part or accessory has become a component part.

The taking of credit by the tire or tube manufacturer for the tax for which he reimbursed the manufacturer of the part or accessory will be allowed only if the tire or tube manufacturer keeps such records and evidence as will clearly establish his right to this exemption.

SPECIAL NOTE: Since under Article 6 of the regulations 47, a purchaser of such parts or accessories cannot make claim to the Government for credit unless he knows the amount of such tax and unless he actually did pay as a tax the amount claimed, it will therefore be observed that the purchaser should request the manufacturers who furnish him with such parts or accessories to bill the tax as a separate item. Likewise billings covering the sale of cement, gum, etc., to accessory kit assemblers and other customers of like character should show the tax as a separate item.

ACCESSORY KIT ASSEMBLERS.

The principle laid down by the Treasury Department thus affecting tire and tube manufacturers likewise applies to those concerns which purchase their gums, cement and fabrics from rubber manufacturers and merely place an assortment of these materials in a kit for sale to the consumer. Thus, it appears that rubber manufacturers when selling cement, fabrics, gums, etc., to a customer who assembles these materials in a kit, should charge the customer a tax. This customer may, as above indicated, subsequently obtain from the Government a credit for the tax so paid to the rubber manufacturer.

IV. SALES TO THE GOVERNMENT, ETC.

ARTICLE 10 OF REGULATIONS 47.

Articles enumerated in Section 900, Sub-divisions 1, 2 and 3, when sold by the manufacturer thereof to state, city, county, or municipal governments, are exempted from tax. Where such articles are thus sold by any one other than the manufacturer thereof, the sale is taxable. The Treasury Department in Regulations 47 departs from the previous ruling given the committee and holds that sales to the United States Government are taxable.

V. ULTIMATE USE AS AFFECTING TAXABILITY.

ARTICLES 11, 12, AND 13 OF REGULATIONS 47.

The sale of an article by the manufacturer thereof may be taxable even though the article is not eventually used as a part or accessory for any of the articles enumerated in Section 900, sub-divisions 1 and 2. For instance the new regulations provide (see Article 16) that where tires are sold for use on trailers such tires are tax-exempt. This does not mean, however, where the tires reach the trailer owner through an intermediary, such as a dealer, that the original sale of such tires by the manufacturer is exempt.

Hence the present ruling is in direct contradiction to the principle recited in the latter part of page two and the first part of page three of the letter of March 11. Where tires are sold to a dealer and the dealer subsequently sells the tires to a trailer owner, the manufacturer cannot employ the new ruling and obtain credit for the tax on such tires should he refund it to the dealer.

VI. SALES TO MANUFACTURERS.

ARTICLE 14 OF REGULATIONS 47.

Article 14 makes it perfectly clear that all sales of tires, tubes, parts or accessories to manufacturers are not necessarily exempt from tax. The exemption applies only where the articles sold are for use, and are so used, by the manufacturer in the manufacture or production of new cars or for free replacement by him under contract of guaranty. Sales to the manufacturer for any other use are taxable. It is suggested that the certificate referred to in this article be worded as follows:

Referring to the Federal Excise Tax Law it is hereby certified that the articles covered by this order or contract of sale are to be used by the undersigned exclusively in the manufacture or production of new cars.

.....

(Signature of Purchaser.)

SUPPLEMENTAL COMMENT ON EXCISE TAXES.

May 20, 1919.

To firm members of The Rubber Association of America:

In accordance with the intention expressed in our circular letter of May 14, the special committee appointed in the matter of the Federal excise tax secured a hearing before the Commissioner of Internal Revenue and other officials of the Department, on Thursday, May 15. Doubtful questions affecting the rubber industry were presented as formal inquiries to the Commissioner, and as a result of the conference the committee gathered some impressions relative to possible future changes in the regulations which it is deemed advisable to pass on to members of the Association with the full understanding, however, that there is no authoritative basis for procedure in respect to the tax other than the law itself or the rulings of the Department as set forth in Regulations 47.

The committee's interpretation of Regulations 47 as set forth in the letter of May 14 seems to be correct, and there is no reason to believe that these interpretations will be modified except as subsequent regulations or Treasury Decisions may furnish a basis for a modification. The committee was led to believe that certain modifications might be made, and these possible modifications are given for the information of members of the Association, referring in each case to the title number under which the subject in question was treated in the letter of May 14.

I. BASIS OF TAX.

The committee presented to the Department the impracticability of basing retail sales upon the average wholesale price of the month immediately preceding. The Department has under consideration changing the regulations so as to make the basis of the tax in retail sales the average price at which the manufacturer sold the same article at wholesale during the second month preceding the month during which the retail sale was made. If this modification is made, retail sales in May, for instance, will be based upon the average wholesale price for March.

II. ADJUSTMENTS, REPLACEMENTS AND EXCHANGES.

The committee strongly pressed the justice and advisability of a return to the informal ruling on this subject given to the committee in March, 1919, and set forth in the letter of March 11, under which the tax in the case of adjustments, replacements and exchanges was to have been based upon the actual price, if any, paid to the manufacturer for the new tire or inner tube delivered in the transaction of adjustment, replacement or exchange. It will be noted that such a modification of Article 5 of Regulations 47 would be important as affecting adjustments, replacements, or exchanges of tires and tubes sold prior to February 25, and therefore, tax-free. The Department took the matter under advisement.

III. TAXABLE PURCHASES BY TIRE AND TUBE MANUFACTURERS.

The committee was given to understand that a supplemental regulation or Treasury Decision was in contemplation by the Department, modifying the provisions of Articles 6 and 7 of Regulations 47. It seems probable that a supplemental regulation will provide that manufacturers of tires, tubes and accessories may purchase tax free, for use in the manufacture of their products, articles otherwise taxable, and that such purchasers will be required at stated intervals to furnish a report as to the disposition of articles so purchased. On the basis of this report, the tax will be payable on articles so purchased and not used by the purchaser in the manufacture of his products. Such a ruling would probably place the manufacturer of tires, tubes and accessories in the same position as car manufacturers with reference to tax-exempt purchases and procedure to secure the tax exemption.

IV. SALES TO THE GOVERNMENT.

It was not indicated that any change would be made in the regulations with reference to sales to the Government.

V. ULTIMATE USE AS AFFECTING TAXABILITY.

There is no reason to believe that a modification will be made in the regulations affecting the interpretation under this title in the letter of May 14. The committee, however, pressed the point that where sales direct by a manufacturer were non-taxable, the same should be true of sales of the same articles through an intermediary, such as a dealer or jobber. The suggestion was taken under advisement but little hope was given for anticipating a change in the regulations.

VI. SALES TO MANUFACTURERS.

The certificate suggested under Title VI of the letter of May 14 was informally approved by the Department. As indicated under Title III above, a supplemental ruling is probable, providing that where an order or contract of sale is covered by this certificate, the sale shall be tax-free, and further providing for a report by the purchaser at stated intervals relative to his use of the articles purchased tax-free. A tax will be levied upon such articles as are shown by this report to have been used by the purchaser other than in the production of articles of his manufacture.

It appears that the Government will take the position that any sales taxable under the law, made from February 25 to May 1, the date of the

issuance of Regulations 47, will be taxable in accordance with the provisions of Regulations 47.

A form of "Proof of Exportation" to meet the provisions of Article 43 of Regulations 47 was submitted by the committee. This form will be compared by the Department with suggested forms submitted by Exporters' Associations and others and an approved form will be adopted and issued.

The committee cannot emphasize too strongly the fact that the Internal Revenue Department refuses to be committed by any informal opinions given in conference, and this special report of the committee is made only for the purpose of giving all members of the Association the benefit of information in the possession of the committee. While the report may serve to prepare the members of the Association for possible supplemental rulings, no member should, without fully realizing the risk, proceed in regard to the excise tax upon any other basis than is found in the law itself or in Regulations 47 as they now stand. Regulations 47 in their present form furnish the only authoritative interpretation of the law as far as the Treasury Department is concerned, and no alteration is authoritative unless made by a formal written Treasury Decision.

The committee will supplement its reports to the Association as the occasion may demand.

ASSOCIATION NOTES.

The Druggists' Sundries Division will meet on June 10 and 11 at the Yale Club, New York City.

W. J. Kelly, chairman of the Special Liberty Loan Committee, volunteered to solicit subscriptions from the rubber trade for the Salvation Army drive of last month. While no specific sum was allotted, the rubber industry responded generously.

A COURSE FOR RUBBER FACTORY FOREMEN.

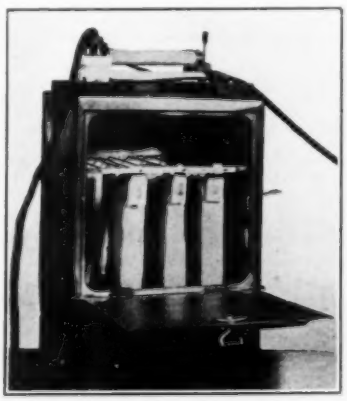
The Mechanical Rubber Co., Chicago, Illinois, is conducting a three-month course in production methods, for the benefit of rubber factory foremen. This course is under the direction of the Business Training Corporation of New York, and is edited by John E. Calder, M. E. There are six text-books and a series of six lectures delivered at intervals. The course is intended to give each foreman new ideas and advanced instruction as to the best and most efficient manner of handling his daily production problems.

TESTING OF TEXTILE MATERIALS.

THE METHODS for examining and testing fibers and textile fabrics as conducted at the Bureau of Standards, are given under the above title in Circular of the Bureau of Standards No. 41 (third edition), from which the following abstracts are taken:

TENSILE STRENGTH AND LOAD-STRETCH RELATIONS.

These determinations are made by tests upon single strands or upon skeins. The instruments employed in these tests are of the dead-weight type, and stress is uniformly applied by motor or by water pressure. All tests are performed under standard atmospheric conditions, the yarn or tissue being wound at least three times around a ¾-inch drum securely held at each end. The testing length between center of drums is six inches and the pulling jaws travel at the rate of 12 inches per minute.



OVEN FOR DRYING TEST SPECIMENS.

DRY WEIGHT.

Bone-dry weighings are made in the oven illustrated. A motor-driven fan circulates the atmosphere in the oven to insure uniformity of heat. The sample to be weighed is placed in one of ten small baskets carried by a chain. This chain may be turned by a wheel outside the oven, bringing each basket successively into such position that it may be transferred to a hook suspended from one end of the balance by means of another hook operated from the outside of the drying-oven.

OVEN FOR MAKING DRY WEIGHINGS.

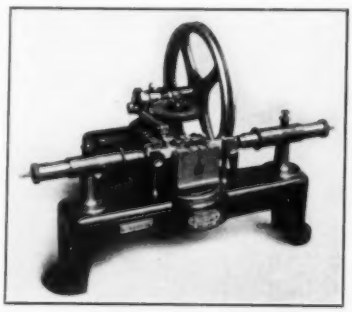
FABRICS.

Some of the determinations made upon fabrics are: weight, tensile strength and load-relations, percentage of fiber composition, thread count, yarn number or size, folding endurance, etc.

FOLDING ENDURANCE.

Some materials are subjected in actual use to considerable folding. In such cases, folding endurance tests will show to what extent they may be expected to resist deterioration from this cause.

The folding test is made upon a specially constructed machine which registers the number of alternate folds the specimen endures before breaking under a given constant tension. The determination is made in the standard atmosphere upon a test strip 15 mm. (19/32-inch) wide and 95 mm. (3¾ inches) long. The number of double folds made before rupture occurs is reported. By a double fold is meant that the sample is folded flat upon itself, then opened and folded at the same point upon itself in the reverse direction. A constant tension of 1,000 grams (35 ounces avoirdupois) is applied during the folding operation and the double folds are made at a rate of 200 per minute.



MACHINE FOR TESTING FOLDING ENDURANCE.

WASTE MATERIAL DEALERS MOVE TO NEW YORK.

About June 1, 1919, the headquarters of the National Association of Waste Material Dealers, formerly at 185 Summer street, Boston, Massachusetts, will be established in a suite of offices on the eleventh floor of the Times Building, Times Square, New York City. The formal opening, with a reception for members will take place on Monday, June 16, which is the day preceding the regular quarterly association meeting.

Charles M. Haskins, the secretary, has severed his connection with the "Commercial Bulletin," and will henceforth devote his entire time to the association. Plans are under way looking to the establishment of a mercantile credit service which will be of great service to members.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

S. A. E. Adopts Standards Recommended by Tire and Rim Division.

AT the annual meeting of the Society of Automobile Engineers, held February 5, 1919, recommendations of the Tire and Rim Division of the Standards Committee were approved for final presentation to the voting members of the society. The following S. A. E. Standards were adopted by the letter ballot which closed April 5.

SOLID TIRE SECTIONS.

Solid Tire Widths, Inches.	Minimum Total Sectional Area of Rubber, Square Inches.
3½	6.75
4	7.75
5	10.75
6	13.75
7	16.75
8	19.75
10	25.75
12	31.75
14	37.75

The above table is in complete accord with the schedule worked out and adopted by the Solid Tire Division, War Service Committee of the Rubber Industry of the U. S. A. These areas include the hard and soft rubber used in solid tires.

INDUSTRIAL TRUCK TIRES.

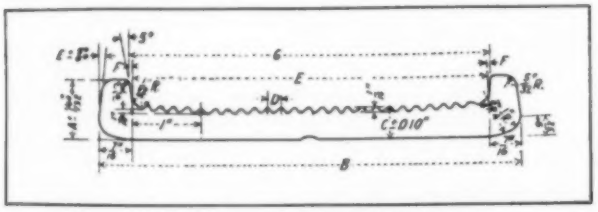
Tire Dimensions.		Wheel Dimensions.	
Nominal Diameter, Inches.	Sectional Widths, Inches.	Wheel Diameter, Inches.	Widths of Felloes, Inches.
10	3½	6	2¾
10	5	6	4¼
16	3½	12	2¾
16	5	12	4¼
20	3½	16	2¾
20	5	16	4¼
24	3½	20	2¾
28	3½	24	2¾

Wheel diameters shall be 4 inches less than the nominal tire diameters. The height of the finished tire is to be 2 inches for all sizes. The width of the wheel felloe is to be in accordance with the present S. A. E. standard truck tire practice and the rim diameter tolerances will be plus 0.005, minus zero. This will make all the former or present S. A. E. standards for industrial truck tire sizes null and void.

BASE BANDS FOR SOLID TIRES.

Base Band Size.	A.	B.	Limits of B.	C.	Corrugations. No.	Corrugations. D.	E.	G.	F.
3½	3/4	4 1/4	±1/32	11/32	18	0.191	3 7/16	3 9/16	1/16
4	25/32	4 13/16	±1/32	3/8	20	0.196	3 59/64	4 1/16	9/128
5	27/32	5 7/8	±1/32	7/16	26	0.189	4 59/64	5 1/16	9/128
6	27/32	6 7/8	±1/32	7/16	32	0.185	5 59/64	6 1/16	9/128
7	27/32	7 7/8	±1/32	7/16	36	0.192	6 59/64	7 1/16	9/128
8	7/8	8 7/8	±3/64	7/16	40	0.196	7 27/32	8	5/64
10	7/8	10 7/8	±3/64	7/16	50	0.196	9 27/32	10	5/64
12	7/8	12 7/8	±3/64	7/16	60	0.197	11 27/32	12	5/64
14	7/8	14 7/8	±3/64	7/16	70	0.197	13 27/32	14	5/64

The above dimensions conform to the recommended series of solid tire sizes and are in accordance with the base bands recommended and adopted by the War Service Committee of the Rubber Industry of the U. S. A. The recommended bands



BASE BANDS FOR SOLID TIRES.

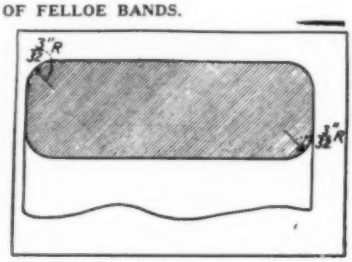
relate to corrugated mill sections and it is optional with tire manufacturers to use either mill corrugated or dovetail facings, as the same general dimensions apply to bands with either facing.

BASE BANDS FOR INDUSTRIAL TRUCK WHEELS.

The sections of tires and base bands as recommended for solid tires for trucks will also apply to industrial truck wheels, and the recommended S. A. E. standard 3½ and 5-inch pressed-on channel sections shown in the accompanying drawing is adopted for industrial truck wheels.

EDGES OF FELLOE BANDS.

The present specification as revised at the June meeting in Dayton to 3/16-inch radius on the inside edges and 1/16-inch radius on the outside edges of bands, is a specification to which it is practically impossible to get the mills to roll steel; therefore, the edges of felloe bands has been changed to 3/32-inch radius for all edges.



EDGES OF FELLOE BANDS.

ALLOWABLE TOLERANCES FOR FELLOE BANDS.

The tolerances given on page 8a, S. A. E. Handbook, Volume I, are used for the inspection of not only steel bands on wood wheels but also for steel wheels. The wording at the bottom of page 8a is changed to read, "Band circumference after application to wood wheels and circumferences of steel wheels."

On account of the difficulty of inspecting circumferences with a tape to the present close tolerances, "Band circumferences before application" is changed to prevailing commercial tolerances of plus 1/32 minus 1/16-inch.

WOOD FELLOE DIMENSIONS—PNEUMATIC TIRE RIMS.

At the June, 1918, meeting of the Society wood felloe dimensions were adopted for only the 6, 7 and 8-inch rims. To complete this specification for 3½, 4 and 4½-inch rims, the following dimensions are adopted:

Nominal Tire and Rim Size.	Width.	Depth.
30x3½	1½	1¼ +1/8 −0
32x3½	1½	1¼ +1/8 −0
33x4	1¾	1¼ +1/8 −0
34x4½	[1] 2 / [2] 2½	1¼ +1/8 −0

These felloe band dimensions conform with those adopted by the Automotive Wood Wheel Manufacturers' Association.

S. A. E. TIRE AND RIM DIVISION.

The Tire and Rim Division of the 1919 Standards Committee has been assigned the following subjects:

Airplane Landing Wheels, Carrying Capacity of Solid Tires, Pneumatic Tire Sections, Pneumatic Tires for Passenger Cars and Commercial Vehicles, Rim Dimensions—Cast Steel Wheels, Rubber Tires for Tractors, S. A. E. Deflection and Set Tests for Rims, Section Dimensions of Solid Tire Single and Dual Wheels with reference to thickness of permanent metal felloe band; Solid Tire and Wheel Diameters, Wheel Circumferences; Solid Tire Sizes and Wood Spokes, Passenger Cars.

[1] Width of felloes for rims with special sections.
[2] Width of felloes for demountable rims on cold-rolled bands.

The personnel of the Tire and Rim Division and the assignments to the different subdivisions are as follows:

CHAIRMAN.
Charles B. Whittlesey.

PNEUMATIC TIRES FOR PASSENGER CARS.
W. H. Allen, C. I. Bradley, Burgess Darrow, E. C. Hulse, William McMahon, J. C. Tuttle.

PNEUMATIC TIRES FOR COMMERCIAL VEHICLES.
W. H. Allen, C. I. Bradley, J. E. Hale, E. C. Hulse, William McMahon, J. C. Tuttle.

PNEUMATIC TIRES FOR AIRPLANES.
W. H. Allen, W. M. Britton, Burgess Darrow, C. I. Bradley, William McMahon, J. C. Tuttle.

SOLID TIRES.
W. H. Allen, C. I. Bradley, W. M. Britton, Lawrence R. Davis, Hugo Hoffstaeter, J. E. Hale, A. Hargraves.

PNEUMATIC TIRE RIMS.
W. H. Allen, W. N. Booth, C. C. Carlton, Burgess Darrow, Lewis Fine, C. N. McFarland, William McMahon, A. W. Richards, J. G. Swain, J. H. Wagenhorst.

SOLID TIRE BANDS AND RIMS.
W. H. Allen, W. N. Booth, C. C. Carlton, Lawrence R. Davis, Lewis Fine, J. E. Hale, A. Hargraves, C. N. McFarland, O. W. Mott, G. S. Porter, A. W. Richards.

S. A. E. SUMMER MEETING.

Plans are rapidly being completed for holding the summer meeting of the Society of Automotive Engineers at Ottawa Beach, Michigan, from June 23 to 27, inclusive. The place chosen affords ideal facilities for a meeting combining professional sessions with social features and recreation, and present indications forecast a well-attended and very interesting meeting. The papers and discussions will cover all important automotive subjects, particularly the passenger car of the future, farm tractors, and aeronautics. Representative exhibits of automotive apparatus may be arranged.

The recreation features include outdoor sports and athletic contests of varied character, many of the events being open to both men and women. There will be dancing every evening, a grand ball on the evening of June 26, and special entertainments for the ladies.

Reservations for the meeting may be made through the office of the society at 29 West 39th street, New York City.

KLUCINE.

The pseudo-scientific term "Klucine," based on the inventors' names, is the trade designation of a peculiar oil product. It is depolymerized China wood oil. In its commercial preparation it consists of a clear, dark amber-colored solution in gasoline. In this form it may be applied to fabrics and metallic surfaces, depositing a tough, elastic coating after 24 hours' drying. The Klucine solution may be used pure or in combination with pigments as a paint vehicle for the weather protection of any surface. Owing to its thinness, the film deposited by the solution has about double the covering capacity of ordinary painting materials.

Chemically, Klucine film is inert and when dry is insoluble in its original solvent. It is very flexible under all conditions of temperature, non-porous and tough. As applied to fabrics it penetrates the fibres and bridges the intervals of the woven structure, rendering the fabric both air and moisture proof. As a compounding ingredient it is said to add appreciably to the tensile strength of vulcanized rubber mixings. Pure rubber articles such as thread, elastic bands, and soft rubber goods generally, are preserved from deterioration by oxidation, it is said, by the application of a light coating of Klucine solution.

JUDICIAL DECISIONS.

FLIGEL, ET AL. *vs.* SEARS, ROEBUCK & Co.—Circuit Court of Appeals, Second Circuit, November 13, 1918.

Patent No. 1,099,031 for a waterproof garment including a cape and hood, the hood having a section capable of conversion either as a vizor or a military collar. This is known to the trade as the Billie Burke Brand.

Sears, Roebuck & Co. do not manufacture but sell the alleged infringing article. When the case came up in the District Court the court decided that there was no invention or infringement but the Court of Appeals held that there was invention but that the article sold did not infringe since the band on the article sold by Sears, Roebuck & Co. was simply a military collar and did not have any other function than decoration and was not capable of being used as a vizor as in the patented article. (Federal Reporter, Volume 254, page 698.)

DECISIONS OF COMMISSIONER OF PATENTS.

EX PARTE ROBERT E. MILLER, INC. Decided March 14, 1919.

The term "U-Put-On" as a trade-mark for rubber heels with an open casing attached, so that it may be applied by slipping the casing over the flared heel of a woman's shoe, held not registerable as a trade mark, since it is descriptive of the goods with which it is used. This decision was given by Assistant Commissioner Clay in affirming the ruling of the Examiner. (Official Gazette, March 15, 1919, page 733.)

CUSTOMS APPRAISER'S DECISIONS.

Protest 931,148, of George Borgfeldt & Co. (New York). RUBBER NIPPLES.—Rubber nipples classified as toys at 35 per cent ad valorem under paragraph 342, Tariff Act of 1913, are claimed to be rubber nipples dutiable as druggists' sundries at 15 per cent under paragraph 368. (Treasury Decisions, Volume 36, No. 18.)

Protests 930,720, etc., of Pitt & Scott (New York). INDIA RUBBER MANUFACTURES.—Merchandise classified as a manufacture of hard rubber at 25 per cent ad valorem under paragraph 369, Tariff Act of 1913, is claimed dutiable as a manufacture of india rubber or gutta percha at ten per cent under paragraph 368. (Treasury Decisions, Volume 36, No. 18.)

CONCERNING TRADE-MARKS.

A booklet of interest to every manufacturer and particularly to those in the rubber trade has been issued by William E. Richards, an attorney of New York, which contains a digest of the most useful information pertaining to trade-marks, handled in such a way as to be most readily comprehensible to all. The contents are in brief form and compiled so that all the facts necessary to the selection and registration of a trade-mark for a new line of goods can be obtained in a half-hour's time. Mr. Richards' booklet is divided into sections concerning "Digest of United States Law and Practice," "Digest of Practice in Foreign Countries," "Piracy of Trade-Marks Abroad," "Schedule of United States Charges," and "Schedule of Foreign Registration Charges." Mr. Richards states that the purpose of his book is to "present in concise form for ready reference the features most necessary to be available to lawyers and manufacturers to enable them to understand readily the leading points of law and practice on this important subject matter, and to take the necessary steps to secure protection for this class of property."

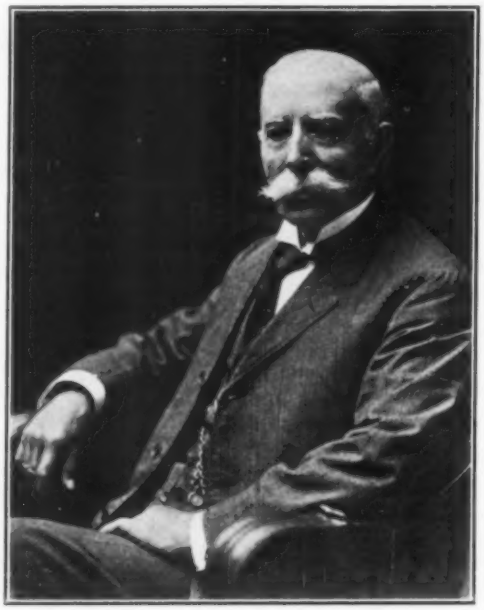
Nothing can be more important to the manufacturer of a new line of goods than the selection of a proper trade-mark and it may mean thousands of dollars to him eventually. In this regard Mr. Richards' brief advice on this subject cannot be improved upon.

First. It will be obvious that the most desirable and effective marks are those that are (a) simple in design; (b) easy to understand and remember; (c) attractive in appearance; and, (d) if the marks is an arbitrary word, easy to speak, spell, and attractive in sound.

The Honorable Augustus O. Bourn.

SCIENCE, politics, literature and rubber manufacture, while not closely correlated, are all more or less combined in the subject of this sketch, who is one of the oldest active members of the industry to-day. As a founder of two rubber manufacturing concerns and an investigator of rubber chemistry and vulcanization, he is prominent in the industry. As Governor of his state and as Consul-General at Rome, he was prominent in politics, while his literary work, mainly published for private distribution, serves to show another aspect of this versatile man.

Augustus Osborn Bourn was born October 1, 1834, at Providence, Rhode Island, and was educated at the public schools and Brown University in that city. After graduation he entered the employ of his father's firm, Bourn & Brown, later Bourn, Brown & Chaffee, manufacturers of rubber shoes, of which firm, after the death of his father, he became a member. In 1861 this firm was incorporated as the Providence Rubber Co. and seven years later was merged with the National Rubber Co. Mr. Bourn retained his connection with this company until 1887 or 1888, when he retired from business and joined his family in Europe.



Returning to this country in 1893, he established a rubber factory at Providence the next year, carrying on the business as the Bourn Rubber Co., and manufacturing footwear under the "Providence" and "Union" brands. When this business was incorporated in 1902, he continued to be president and manager. Meanwhile the plant has steadily grown till it now covers an entire city block in Providence.

About 15 years ago the Bourn Rubber Co. commenced the manufacture of insulated wire, and the business so increased in volume as to compel the erection, in 1918, of a separate factory for this branch of its business. No man in the rubber business has had a wider experience than ex-Governor Bourn. He is acquainted with every detail of the manufacture, as well as with the general management, of the business. He introduced many new styles and originated numerous innovations while with the National Rubber Co., among them being "snow excluders," fusion linings for boots and lumbermen's goods and button gaiters. He also manufactured the style now known as "Alaskas" several years before any other company produced this class of footwear.

As an investigator, his experiments in vulcanizing began in 1903, and were reported in an address at the Rubber Conference in New York in 1912, receiving the marked attention of all practical rubber men and chemists. He showed that the rate of vulcanization was doubled for every 11 degrees F. and that the same compound which vulcanized in 14 hours at a temperature of 194 degrees F. could be similarly vulcanized in 15 seconds in a heat of 327 degrees F.

He has written several treatises on astro-physical subjects, which, however, he declines to have published, having written them solely to occupy his spare moments. Some years ago he published, for private distribution, a small volume of memorial addresses of prominent public men delivered in Rhode Island and elsewhere, and he is now preparing for publication a large number of speeches delivered between 1876 and 1888, which exemplify the political conditions and thoughts of that period.

In politics, Mr. Bourn has played a prominent part. He was a member of the Rhode Island Senate from 1876 to 1883 and from 1886 to 1888. For six years from 1877 he was chairman of the Finance Committee and member of the Judiciary Committee. He was the author of the "Bourn Amendment" to the Constitution of Rhode Island, extending to foreign-born citizens the same rights of franchise enjoyed by the native-born. In 1883 he was elected Governor by the Republicans, and re-elected in 1884, receiving all but 13 votes of the total of nearly 16,000 votes cast. During his term in this office, at the time of the settlement of the international differences growing out of the New Orleans riots, he was in 1889 appointed Consul-General of the United States for Italy and was stationed at Rome. For a period he was both Consul-General and in charge of the Legation.

In his younger days he served with the Providence Horse Guards, rising from private to the rank of Lieutenant-Colonel of the First Battalion of Cavalry.

He moved from Providence to Bristol, Rhode Island, in 1873, and his residence, "Seven Oaks," is one of the most attractive in that city, the garden running down to the waters of Narragansett Bay. He is very fond of flowers and this garden is one of his hobbies; having been arranged by himself, it is now cultivated in accordance with his directions.

Ex-Governor Bourn is a busy, as well as a business, man, leaving Bristol at 10 a. m. and returning at 7:05 p. m. At noon it is his custom to lunch at the University Club, at Providence, with a number of congenial men, all graduates of Brown University, including editors, educators, jurists and manufacturers promnent in the professions and leading industries.

Ex-Governor Bourn is an ex-officio member of the board of directors and Executive Committee of The Rubber Association of America, and was the second president of the New England Rubber Club, the predecessor of the above-named association.

INTERESTING LETTERS FOR OUR READERS

ARMENIAN BOLE.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Can you give me any information as to what bole Armenia may be? Furthermore, is it used in rubber compounding?

Bole Armenia, or more correctly Armenian bole, is a bright red, friable clayey earth found in Tuscany and in Armenia. Chemically it is clay or hydrous aluminum silicate, known in its purest forms as kaolin and fuller's earth. Its color is due to the presence of iron oxide.

Armenian bole is used to color or adulterate various substances, notably tooth powders, and was formerly used in certain horse medicines as an absorbent and astringent. Very little attention has been paid to it in rubber manufacture, although it is said that 10 per cent added to Pará rubber has been employed in making inner tube patches.—THE EDITOR.

News of the American Rubber Industry.

A RUBBER TECHNOLOGIST.

THERE are few men with scientific training who have had such a wide experience in rubber chemistry as Dr. Albert A. Somerville, who is now associated with the R. T. Vanderbilt Co., 50 East 42nd street, New York, dealer in rubber chemicals and ingredients.

(C) *Underwood & Underwood, N. Y.*
DR. ALBERT A. SOMERVILLE.

Dr. Somerville studied and taught at DePauw and Cornell Universities, specializing in sciences and engineering. Summers he worked at Franklin Institute and at the Bureau of Standards in Washington. In 1912 he took charge of the physical testing laboratory of the India Rubber Co., New Brunswick, New Jersey, where guayule was one of the chief materials handled. The next year he was taken into the development department of the United States Rubber Co., and for five years supervised the experimental and development work at its laboratory in New York City, mainly on mechanical goods, but to some extent on tires and footwear. A year ago he was appointed technical assistant to the general manager of all the factories of the United States Rubber System.

During the war he represented the company on the War Service Committee, and he was the company's representative as a member of the American Society for Testing Materials, in the rubber section of which he has been especially active. He is also a member of the American Physical Society and of Masonic organizations.

Dr. Somerville therefore brings to his new position a wide, practical, and scientific knowledge of many lines of rubber manufacture, which will make him a valuable man, not only to the company, but also to its customers.

DIVIDENDS.

The Ajax Rubber Co., Inc., New York City, manufacturer of tires and inner tubes, has declared its quarterly dividend of $1.50 per share, payable June 15, on stock of record May 31, 1919.

The Converse Rubber Shoe Co., Malden, Massachusetts, manufacturer of rubber footwear, has declared its semi-annual dividend of three and one-half per cent on preferred stock, payable June 1 on stock of record May 24, 1919.

The B. F. Goodrich Co., Akron, Ohio, manufacturer of tires, balloon fabric, and other rubber goods, has declared its quarterly dividend of one and three-quarters per cent on preferred stock, payable July 1, 1919.

The India Tire & Rubber Co., Akron and Mogadore, Ohio, tire manufacturer, has declared a quarterly dividend of two per cent, payable July 1 on common stock; also one of one and three-quarters per cent on preferred stock, payable at the same time.

The Mason Tire & Rubber Co., Kent, Ohio, manufacturer of tires, declared a dividend of two per cent, payable May 20 on preferred stock of record January 31, 1919. A further dividend of ten per cent has been declared, payable July 15 on common stock of record June 10, 1919.

The New Jersey Zinc Co., New York City, manufacturer of zinc products, declared a quarterly dividend of four per cent, payable April 30 on stock of record May 10, 1919.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, manufacturer of tires and other rubber goods, has declared quarterly dividends of one and one-half per cent on common shares, and one and three-quarters per cent on preferred shares, payable June 30 on stock of record June 15, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, manufacturer of automotive machinery, electric control devices, etc., has declared quarterly dividends of two per cent, payable July 15 and 31, respectively, on preferred and common stock of record June 30, 1919.

CHANGES IN PERSONNEL OF THE NEW JERSEY ZINC CO., INC.

The New Jersey Zinc Co., Inc., 160 Front street, New York City, and its branch, the Mineral Point Zinc Co., 1111 Marquette Building, Chicago, Illinois, announce the following recent changes in organization: E. V. Peters, general sales manager, succeeding H. G. Clopper, resigned, New York; Bushnell Bigelow, manager of Eastern sales, New York; R. M. Neumann, manager of Western sales, Chicago; W. P. Hardenbergh, Jr., manager of export sales, New York; J. Matthias, Jr., assistant sales manager, Chicago; Walter I. Hess, assistant sales manager, New York; F. C. Fuller, assistant sales manager, New York; and R. L. Cathcart, assistant sales manager, Pittsburgh, Pennsylvania.

THE UNITED STATES RUBBER PLANTATIONS, INC.

The organization meeting of the United States Rubber Plantations, Inc., was held Tuesday, May 20, 1919, and the following directors and officers were elected:

BOARD OF DIRECTORS.

H. Stuart Hotchkiss, Samuel P. Colt, Lester Leland, Charles B. Seger, Nicholas F. Brady, Edgar B. Davis, Ernest Hopkinson, W. J. Gallagher, Walter B. Mahony, Homer E. Sawyer, J. Newton Gunn, John W. Bicknell, L. D. Tompkins, W. H. Blackwell, and W. F. Bass.

EXECUTIVE COMMITTEE.

H. Stuart Hotchkiss, Samuel P. Colt, Lester Leland, Charles B. Seger, Walter B. Mahony, John W. Bicknell, and L. D. Tompkins.

OFFICERS.

Samuel P. Colt, chairman; Lester Leland, vice-chairman; H. Stuart Hotchkiss, president; W. J. Gallagher, vice-president; W. S. Gordon, vice-president; John W. Bicknell, vice-president, treasurer, and assistant secretary; L. D. Tompkins, vice-president and secretary; T. H. Lee, assistant treasurer; Walter B. Mahony, counsel for the company.

The United States Rubber Plantations, Inc., holds all the United States Rubber Co.'s plantations in Sumatra. The authorized capital is $40,000,000 preferred and $60,000,000 common, of which $10,000,000 preferred and $20,000,000 common has been issued. Extensions to the vast estates are contemplated in the near future.

PERFECTION MAKES KEYSTONE BRAND OF TIRES.

Since the publication of the many conflicting reports concerning the output of the Perfection Tire & Rubber Co., Fort Madison, Iowa, the following facts have been ascertained. The Perfection company makes under a cost-plus agreement with the Keystone Tire & Rubber Co., New York City, tires branded with the Keystone name and design. This does not affect the output of Perfection tires which are being marketed through the company's regular channels. In addition, the Nemours Trading Corp., New York City, has the exclusive export sales representation for the Perfection tire.

PRICE REDUCTION ON AUTOMOBILE TIRES AND TUBES.

The leading American automobile tire and tube manufacturers have announced reductions in their list prices for casings and tubes effective May 12. These reductions variously average from 10 to 15 per cent on the respective lists of tires and tubes. In explanation of these liberal reductions to the tire-using public one of the largest rubber goods manufacturers states that the lowering of the cost of rubber tires is not due to any apathy in tire buying, for the demand is well in advance of the supply. Three factors entered into the tire-price revision. First, the remarkable industrial efficiency in the rubber industry allowed a quick change from a war to a peace basis. Second, all war restrictions on the importation of crude rubber have been removed, enabling manufacturers to keep ample supplies on hand. Third, considerable progress was made in factory efficiency because of the strenuous pace required to meet Army and Navy demand for rubber goods of all descriptions.

NEW INCORPORATIONS.

Anthony Rubber Co., Inc., April 24 (New York), $5,000. S. R. Anthony, 1931 Madison avenue; L. Rosenstrauss, 309 Broadway—both of New York City; E. Anthony, Hackensack, New Jersey. To manufacture tires and rubber goods.

Arrow Tire & Rubber Co., Inc., April 28 (New York), $15,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Atlas Tire & Rubber Co., May 9 (New Jersey), $500,000. H. A. Ludeke, I. A. Worthington, K. Keller—all of Trenton, New Jersey. Principal office, 26 West State street, Trenton, New Jersey. Agent in charge, M. G. Buchanan. To manufacture, purchase, and sell tires, tubes, and automobile accessories.

Bradstone Rubber Co., April 14 (New Jersey), $125,000. W. P. Bradley, president and treasurer, 113 George street; I. V. Stone, vice-president and general manager, 117 Sumter street—both of Providence, Rhode Island; M. J. King, 172 Clinton Place, Hackensack, New Jersey. Principal office, de Hirsch avenue, between Jefferson and Adams avenues, Woodbine, New Jersey. Agent in charge, I. V. Stone. To manufacture, buy and sell rubber goods.

Consumers Rubber Co., March 5 (Wisconsin), $20,000. J. E. Bright, president and manager, 1404 South Main street; H. F. Johnson, vice-president, 1012 16th street; A. Hugunun, secretary and treasurer, 16th street and Junction avenue—all of Racine, Wisconsin. Principal office, Racine, Wisconsin. To manufacture, purchase, and deal in automobile tires, tubes, and accessories.

De Rosa Corp., May 13 (New York), $250,000. A. De Rosa, 255 Fourth avenue; J. C. Danzilo, 32 Court street—both of Brooklyn; M. J. Hertel, 1 West 104th street, New York City—both in New York. To manufacture auto rims.

Eastern Tire & Rubber Co., March 15 (Delaware), $500,000. P. L. Garrett, A. Jamison, F. E. Sterling—all of Wilmington, Delaware. Delaware agent, P. L. Garrett, Equitable Building, Wilmington, Delaware. To acquire property for the planting, cultivation, and growing of rubber trees, and to produce and deal in rubber.

Ellison Tire & Rubber Co., Inc., May 19 (New York), $10,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Enid Tire & Rubber Co., May 12 (Delaware), $100,000. T. L. Croteau, P. B. Drew, M. M. Clancy—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires and inner tubes.

Ferguson Tire Corp., May 16 (New York), $200,000. J. N. Mead, L. H. Ferguson—both of Ithaca; J. W. Ellis, Buffalo—both in New York. Principal office, Buffalo, New York. To manufacture tires.

Five-Fourteen Tire Co., March 11 (Tennessee), $15,000. A. F. Fulner, W. E. Newman, W. W. Graham, M. H. Smith, F. Ford. Principal office, Memphis, Tennessee. To buy and sell automobile parts, supplies, accessories, etc.

Franklin Rubber Co., Inc., April 25 (New York), $5,000. E. R. Dodge, D. Michelson, B. Greenwald—all of 61 Broadway, New York City. To manufacture tires.

G. & G. Tire & Rubber Co., Inc., May 2 (New York), $20,000. M. J. Goldman, B. Gottlieb, A. J. Halprin—all of 41 Park Row, New York City. To manufacture tires and rubber goods.

Holcomb Rubber Co., April 12 (Connecticut), $25,000. A. Wurts, president and treasurer, J. F. Herbst, A. S. Campbell—all of Hartford, Conn. Principal office, 713-715 Albany avenue, Hartford, Connecticut. To deal in auto and truck tires and accessories.

Home Vulcanizing Co., April 7 (Ohio), $15,000. J. B. Frostick, president, 1717 Baird avenue; J. P. Grubb, vice-president and manager, 1804 High street; A. F. Marting, secretary and treasurer, 1138 Eighth street; S. D. Ryggles, director, 610 Gay street; G. E. Kricker, director, 812 Sixth street—all of Portsmouth, Ohio. Principal office, corner of Sixth and Gay streets, Portsmouth, Ohio. To vulcanize and sell tires, tubes, and automobile accessories.

Keyes & Stoner, Inc., May 15 (New York), $5,000. J. F. Stoner, L. W. Keyes, H. V. Clements—all of Auburn, New York. Principal office, Auburn, New York. To deal in auto tires.

Lafayette Tire Corp., April 25 (New York), $4,000. E. W. Smith, 159 Goulding avenue; R. J. Slagel, 164 Laurel street; F. A. Dorn, 666 Riley street—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

Leonard Tire Co., Inc., May 5 (New York), $10,000. L. Fridiger and C. E. Buchner, 51 Chambers street; N. Danziger, 1435 Ogden avenue—all of New York City. To deal in tires.

McLeod Tire Corp., May 2 (New York), $500. M. H. Weiss, P. E. Barden, K. A. Woods—all of 165 Broadway, New York City. To manufacture tires.

McTaggart Tire & Rubber Co., April 17 (Delaware), $1,000,000. T. L. Croteau, P. B. Drew, M. M. Clancy—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To deal in and manufacture rubber tires, tubes and accessories.

Majestic Tire Co., Inc., May 2 (New York), $10,000. M. Levin, N. Weinberg, F. Nordenschild—all of 19 Cedar street, New York City. To manufacture tires.

March Tire & Rubber Co., April 25 (New York), $20,000. P. S. Malickson, Bala; H. J. Saizow, 3837 Poplar street, Philadelphia—both in Pennsylvania; S. B. Howard, 65 Cedar street, New York City. To manufacture tires.

Mechanical Tire Co., Inc., May 19 (New York), $10,000. A. Bers, 10 Desbrosses street, New York City; C. S. Bornheim, 13 Depot Place, Ruth Bornheim, 18 Wilson Place—both of Mt. Vernon—both in New York. Principal office, Mt. Vernon, New York. To manufacture tires, etc.

Mileage Tire Co., The, March 15 (Illinois), $15,000. A. H. Olson, H. T. Flory, E. L. Madden, J. R. Wielgot. Principal office, 2118 Michigan avenue, Chicago, Illinois. To manufacture and sell tires and tubes.

Montana Tire & Rubber Co., March 24 (Montana), $10,000. C. E. and L. L. Wade, W. M. Shirley—all of Watertown, South Dakota. Principal office, Butte, Montana. To sell automobiles and accessories.

Nalo Rubber Co., Inc., April 25 (New York), $10,000. L. Rose, 403 Lexington avenue, New York City; A. Winkler, 583 Ridgewood avenue; E. Aronsohns, 196 Vernon avenue—both of Brooklyn—both in New York. To manufacture tires.

Nassau Tire Co., Inc., May 19 (New York), $50,000. C. S. Baldwin, L. A. Abrams, G. V. Brower—all of Rockville Centre, New York. Principal office, Rockville Centre, New York. To manufacture tires.

National Rubber & Vulcanizing Co., February 18 (Illinois), $10,000. A. G. and R. W. Bergstrom, A. Johnson. Principal office, 905 East State street, Rockford, Illinois. To repair and sell tires, etc.

Nemours Trading Corp., March 31 (Delaware), $6,000,000. A. I. Du Pont, president. J. P. Lawrence, vice-president, R. H. Michel, vice-president, J. H. Noxon, vice-president and general manager, New York City, G. W. Fay, secretary and treasurer, C. B. Bishop, Wilmington, Delaware, A. M. Fox, Wilmington, Delaware. Principal office, 151 Fifth avenue, New York City. Among other articles, to handle Perfection tires.

New England Savold Tire Co., May 14 (Delaware), $3,000,000. T. L. Croteau, M. M. Clancy, P. B. Drew—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To remanufacture salvaged tires.

New York Savold Tire Co., Inc., April 30 (New York), $250,000. A. E. Moore, 37 Wall street, New York City; F. H. Butehorn, 764 St. Johns Place; R. A. MacLean, 318 74th street—both of Brooklyn—both in New York. To manufacture tires.

Ohio Savold Tire Co., May 7 (Delaware), $2,000,000. T. L. Croteau, P. B. Drew, M. M. Clancy—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires.

Over The Top Auto Top Co., April 17 (Delaware), $150,000. R. H. Holmes, S. Peterson, H. P. Hanson—all of Chicago, Illinois. Principal office with the Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in automobile parts and accessories.

Page-Edwards Tire Corp., April 23 (New Jersey), $50,000. R. W. Page, president; D. L. Page, vice-president, both of Maplewood; T. P. Edwards, secretary and treasurer, Roselle—both in New Jersey. A. G. Edwards, general manager. Principal office, 830 Broad street, Newark, New Jersey. Agent in charge, D. L. Page. To manufacture, sell, import, and export automobile tires, tubes, and accessories. This company will handle the Oldfield, Federal, Hewitt and Perfection tires in its territory.

Para Manufacturing Co., April 25 (New Jersey), $50,000. H. E. Lawrence, president; T. J. Wilson, treasurer; A. E. W. More, secretary—all of 533 Van Vorst Place, Union Hill, New Jersey. Principal office, 533 Van Vorst Place, Union Hill, New Jersey. Agent in charge, T. J. Wilson. To manufacture, buy, sell, repair, and deal in fountain pens, stylographic pens, etc., and articles made of rubber and other materials.

Perfection Tire & Rubber Co., Inc., May 13 (New York), $100,000. E. W. McCarthy, 250 West 54th street; A. I. Farb, J. J. Lordan, both of 2 Rector street—all of New York City. To do a tire business.

Risse Tire Sales Corp., April 25 (New Jersey), $25,000. W. S. Kidder, 23 Cedar street; E. A. Hoonan, 4 Earl street; W. J. McFadden, 776 Broad street—all of Newark, New Jersey. Principal office, 23 Cedar street, Newark, New Jersey. Agent in charge, W. S. Kidder. To buy, manufacture, sell, export, import, and generally deal in automobiles, automobile accessories, etc.

Syracuse Rubber Co., Inc., May 9 (New York), $3,000,000. E. R. Caldwell, 210 Onondaga avenue; F. Shane, 2019 Midland avenue; R. L. Caldwell, secretary, 905 Bellevue avenue—all of Syracuse, New York. Principal office, 301-302 Herald Building, Syracuse, New York. To manufacture cord tires and rubber goods. This company has purchased 38 acres for a factory site and intends to build plant thereon in which operation will be started in November.

Tennessee Rubber Co., March 24 (Tennessee), $10,000. S. B. and G. N. Newman, M. Petway, J. A. Ayres, L. G. Broughton, Jr. Principal office, Knoxville, Tennessee. To buy, sell, and deal in rubber, rubber patches, etc.

Thermosuit Corp., The, April 22 (New York), $500,000. M. H. Nason, 111 Broadway; E. E. Gallup, 108 West 43d street; S. R. Driffield, 510 Audubon avenue—all of New York City. To manufacture live-saving apparel.

Tire Service Co. of Brooklyn, May 5 (Delaware), $25,000. W. Mackay, C. E. Barker, J. S. Ogilvie—all of 9 East 40th street, New York City. Delaware agent, H. F. Gilg, 206 West 11th street, Wilmington, Delaware. To manufacture and deal in tires.

Union Hill Tire Sales Station, Inc., March 19 (New Jersey), $4,000. C. A. Weldon, B. Alper, G. A. Dorfman—all of 1877 Broadway, New York City. Principal office, 360 Broadway, Union Hill, New Jersey. Agent in charge, J. F. Homeyer. To deal in automobile tires and tubes.

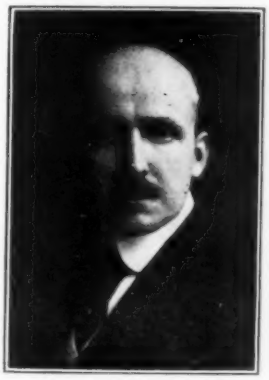
Universal Tire Sales Co., Inc., May 8 (New York), $50,000. M. A. Turski, 789 Fillmore avenue; J. K. Turski, 103 East Parade avenue; F. X. Turski, 51 Houghton street—all of Buffalo, New York. Principal office, Buffalo, New York. Tire agency.

Wright-Jefferies Tire & Battery Co., March 19 (New Jersey), $10,000. T. Wright, 1618 North 15th street, Philadelphia, Pennsylvania; J. N. Jefferies, 183 Easton avenue; W. M. Bloebaum, 60 Albany street—both of New Brunswick, New Jersey. Principal office, 60 Albany street, New Brunswick, New Jersey. Agent in charge, W. M. Bloebaum. To buy, sell, repair, and deal in tires and tubes.

Wright Standard Tire & Rubber Co., April 30 (Delaware), $1,000,000. T. L. Croteau, P. B. Drew, M. M. Clancy—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture automobile tires and rubber goods.

EDWARD V. PETERS, GENERAL SALES MANAGER.

EDWARD V. PETERS, the newly appointed general sales manager of the New Jersey Zinc Co., New York City, though born in St. Louis, Missouri, in 1881, is virtually a New Yorker, having moved East with his family and finished his education at Greenville Academy, Greenville, New York. His first business experience was in the electrical department of the Manhattan railway system, and within a year he was placed in charge of electrical purchases. In 1903 he organized a purchasing department for J. G. White & Co., engineers and contractors, New York City, where he remained in charge until August, 1906, when he accepted a position in the purchasing department of the New Jersey Zinc Co., soon rising to assistant purchasing agent. In 1913 he was made purchasing agent, thereafter becoming assistant sales manager, and, a few weeks ago, succeeded H. G. Clopper, resigned, as general sales manager.



EDWARD V. PETERS.

During the war the New Jersey Zinc Co. was active in serving the Government and also the allied nations, and much of Mr. Peters' time was spent in connection with this work.

Mr. Peters is a man of excellent business judgment, a great believer in cooperation and organization, and has been a potent force in upbuilding the units of the sales staff of the company into an energetic selling organization. He is fond of sports, and in his younger days played baseball and tennis. In the last few years he has confined his recreation mainly to golf and motoring. He is president of the Flushing Country Club, Flushing, Long Island, New York.

CLOPPER GOES TO EAGLE-PICHER CO.

HERBERT G. CLOPPER, for thirty years connected with the zinc industry, and identified with the New Jersey Zinc Co. since its formation in 1897, has resigned as general sales manager of that company to accept the position of vice-president of the Eagle-Picher Lead Co., Chicago, Illinois, corroders and manufacturers of lead products.

HERBERT G. CLOPPER.

Mr. Clopper was born in Camden, New Jersey, August 12, 1873, and was educated in the public schools of that city. In his sixteenth year he entered the employ of the Lehigh Zinc & Iron Co., Philadelphia, Pennsylvania, as office boy. Eight years later, when the New Jersey Zinc Co. was formed he was made assistant bookkeeper. In May, 1899, he became a clerk in the purchasing department, and steadily advancing, he was appointed purchasing agent five years later. He made a thorough study of purchasing systems of industrial corporations, and in 1912, when a general purchasing department was established, with branches in different sections of the country, he was selected as head, with the title of general purchasing agent, in which position he was enabled to create one of the largest and most efficient purchasing organizations in the country. In June, 1913, on the retirement of W. W. Melvin, who for nearly half a century had been with the company, and for much of this time its sales manager. Mr. Clopper was appointed to this important position, and although this change from purchasing to selling required a complete reversal of point of view, his success in the new position is a matter of record, and the Eagle-Picher Lead Co. is to be congratulated upon securing his services.

PERSONAL MENTION.

G. H. Hamilton, formerly special representative of The Federal Rubber Co. of Illinois, Cudahy, Wisconsin, has been appointed export manager, with offices at 38-40 West 62d street, New York City.

G. R. Lundane has been placed in charge of the newly established New York City office of The Black & Decker Manufacturing Co., Baltimore, Maryland, manufacturer of portable electric tools, compressors, and special machinery, with headquarters at Room 2920, Equitable building. Mr. Lundane will include the State of Connecticut in his territory as well as New York City and the surrounding territory. The Black & Decker company have branches in Philadelphia, Atlanta, San Francisco, Chicago, Detroit, Columbus (Ohio), Buffalo and Boston, as well as foreign connections in England, France, Norway, Sweden and Japan.

G. R. LUNDANE.

Arthur J. Peebles has been appointed general sales manager of The Armstrong Rubber Co., Inc., 2 West 61st street, New York City.

J. S. McClurg has been elected to the board of directors of The Carlisle Cord Tire Co., Inc., New York City and Andover, Massachusetts.

Martin K. Whalen, formerly special representative of the Century-Plainfield Tire Co., Plainfield, New Jersey, has been appointed manager of the southern district of the International India Rubber Corp., South Bend, Indiana.

C. G. Hill, who for two years was assistant manager of the record department of The Rubber Association of America, and later in charge of the Association's Pacific Coast office, is now with Charles T. Wilson Co., Inc., New York City, crude rubber importers.

Frank Waldo, of the firm of E. M. & F. Waldo, New York City, dealers in colors and compounding ingredients for the rubber trade, recently returned from Europe where he has been military attaché at The Hague.

W. J. Cromie, formerly with the Belmont Packing & Rubber Co., 139 North 2d street, Philadelphia, Pennsylvania, has become associated with the Gustin-Bacon Manufacturing Co., 1021 Filbert street, in the same city. This concern manufactures mechanical rubber goods, belting, packing, hose, etc.

F. K. Starbird has been appointed northwestern district manager for the Firestone Tire & Rubber Co., Akron, Ohio, and will cover Minneapolis, Great Falls, Minot, Fargo and Des Moines branches.

THE GILLETTE RUBBER CO., EAU CLAIRE, WISCONSIN, HAS TAKEN over the plant and business of the Eau Claire Manufacturing Co. for manufacturing machinery and equipment for the tire trade. A new machine shop has been built and the company is producing a bead-making machine of its own design, as well as tire-building and portable tire stands, tire cores and molds, and other specialties.

TRADE NOTES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has established a branch office at Jacksonville, Florida, on the corner of Forsythe and Clay streets, in the heart of the automobile district. Captain J. L. Branan, recently returned from service in France, is in charge.

The Newman Tire & Rubber Co., Inc., 244 West 54th street, New York, has increased its capital from $5,000 to $200,000. It has added three additional stores to its chain and greatly increased its jobbing business.

The Pearson Products Co., New York City, has recently been incorporated for the purpose of selling certain patented articles and products. Herbert P. Pearson, the incorporator, was formerly with the Cravenette Co.

The Black Hawk Tire & Rubber Co., Hippee Building, Des Moines, Iowa, is building the first unit of its new factory on East 20th street, between Capitol avenue and Walnut street, along the right of way of the Chicago-Great Western, Chicago-Rock Island, and Interurban railway tracks. This unit will be two and one-half stories high, with basement, 216 by 73 feet. The officers of the company are: William Moran, president; John F. Griffin, vice-president; E. A. Lewis, secretary; and J. J. O'Malley.

The Mason Tire & Rubber Co., Kent, Ohio, has bought the three-story building at 233 West 58th street, New York City, where it will make extensive alterations. A large stock of solid and pneumatic tires will be carried in the new quarters, which will be in charge of W. M. Doucette, eastern district manager of the company.

The Miller Rubber Co., Akron, Ohio, has established branches at Charlotte, North Carolina; Memphis, Tennessee; and Cedar Rapids, Iowa, each fully equipped with a complete stock of tires, tubes, accessories, and repair materials.

The Harmon Rubber & Manufacturing Co., Inc., 1211 Harmon place, Minneapolis, Minnesota, has prepared plans for a two-story plant, 40 by 160 feet, to be located in the Midway District, between Minneapolis and St. Paul, for the purpose of manufacturing inner tubes. This company is a reorganization of the Harmon Tire & Repair Co. of Minneapolis, and it manufactures high-grade inner tubes and rubber goods. It will sell to jobbers in the Northwest. The officers are: J. F. Brown, president; W. F. Rickley, vice-president and general manager; and J. E. Johnson, secretary and treasurer.

The Century Rubber Works, Chicago, Illinois, on April 26, suffered by a fire on its premises on Rawson street at Elston avenue. The loss was covered by insurance and the company is again operating at full capacity. Plans are also being drawn for a new plant to be erected at an early date. E. B. Tozier is general manager.

The Carlisle Cord Tire Co., Inc., New York City and Andover, Massachusetts, at its special meeting of stockholders held May 3, 1919, voted to increase its authorized capital stock from $500,000 par value preferred and 10,000 shares of common stock, with no par value, to $1,000,000 par value preferred stock and 25,000 shares of common stock with no par value.

The Archer Tire & Rubber Co., Inc., Minneapolis, Minnesota, has elected the following officers: W. F. Bigelow, president; William A. Beiter, vice-president; and M. A. Hessian, secretary and treasurer.

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, has completed a new factory addition, doubling its facilities. It also expects to build another addition of reinforced concrete, steel and glass, three stories high, 300 feet by 190. It intends to begin manufacturing automobile tire casings before the spring.

The C. A. Shaler Co., Waupun, Wisconsin, manufacturer of vulcanizing apparatus and tools, is building a three-story warehouse, 42 by 90 feet, and when that is completed will build an additional factory building of twice that size.

The Hodgman Rubber Co., Tuckahoe, New York, is building a one-story, reinforced concrete structure, 70 by 134 feet, so constructed that four additional stories can be added later. This building is to be used as an additional calender room.

The American Rubber Co. of Chicago, Chicago, Illinois, has increased its authorized capital stock from $95,000 to $1,000,000.

The Johnstone Tire & Rubber Co., People's Gas Building, Chicago, Illinois, has elected the following officers: E. C. Walton, president; B. R. Blackwelder, vice-president; C. W. Mussey, secretary and treasurer; A. P. Eves, consulting rubber chemist and engineer. Mr. Eves was four years with the Kelly-Springfield Tire Co., four with the Firestone Tire & Rubber Co., and eight with The Goodyear Tire & Rubber Co.

The Rubber Trade Association of New York has removed its offices to 44 Broad street, Room 824, New York City.

The General Asbestos & Rubber Co. has removed from 106 West Lake street to 14 North Franklin street, Chicago, Illinois.

The American Eagle Rubber Cement Co. has removed its general offices and factory from 59 East 43d street to 3026-3030 South La Salle street, Chicago, Illinois.

The American Zinc, Lead & Smelting Co., St. Louis, Missouri, has appointed the American Zinc Sales Co., its representative, at 1415 Conway Building, Chicago, Illinois. A. C. Eide is in charge as manager.

The Hill Pump Valve Co., Archer avenue, Canal and 23d streets, Chicago, Illinois, is building a modern plant to be equipped with electric furnaces and the latest automatic machinery. The building will be one story high and contain about 50,000 square feet of floor space. It is located on the company's recently acquired property at the southeast corner of Belmont and Knox avenues, which fronts 213 feet on the former and 964 on the latter.

A. Daigger & Co., 54 West Kinzie street, Chicago, Illinois, dealers and importers in chemicals, oils, and fillers for the rubber trade, whose factory was damaged by fire a short time ago, report that their building has been remodeled and that they are in position to handle all orders.

Nulsen, Klein & Krausse Manufacturing Co., Levee and Sidney streets, St. Louis, Missouri, dealers in barytes, whiting, and other ingredients used in rubber compounding, has changed its firm name to Nulsen Corporation.

The Stanley Insulating Co., Inc., 43 Exchange place, New York City, and Great Barrington, Massachusetts, manufacturer of the "Ferrostat" rubber-finished vacuum bottle, is a Maine corporation and has been authorized to do business in the State of New York. W. S. Hood is the New York representative and the officers of the concern are: Otis A. Glazebrook, Jr., president; Horace W. Davis, vice-president; William S. Hood, assistant secretary and treasurer; and R. G. Williams, assistant treasurer.

The Parker Pen Co., Janesville, Wisconsin, manufacturer of the "Lucky Curve" fountain pen, will erect a four-story office and factory building, with basement and sub-basement, of reinforced cement and brick veneer, at the corner of Court and South Division streets, to cost $125,000.

The Essenkay Products Co., Chicago, Illinois, manufacturer of the "Essenkay" tire filler, has elected the following officers: F. D. Mayer, president and treasurer; R. Peiser, G. Weir and J. E. Duffield, vice-presidents; and W. B. Russell, secretary.

The W. A. Sheaffer Pen Co., Fort Madison, Iowa, manufacturer of the "Sheaffer" fountain pen, has been authorized to do business in New York State, and A. L. Kugel has been designated representative and manager of its New York City office, at 440 Canal street. The company also has offices in Chicago and San Francisco. The officers are: W. A. Sheaffer, president; B. T. Coulson, vice-president; J. C. Brewster, treasurer; and W. A. Scherfe, secretary.

Foreign Trade

Our Foreign Department, through our Buenos Aires Branch and extensive banking connections throughout the World, has unexcelled facilities for the intelligent and efficient handling of your foreign banking business. Consult us regarding any foreign financial or trade transactions in which you are interested.

The First National Bank of Boston

Capital, Surplus, and Profits, $27,865,000
Resources . . Over $220,000,000

Branch at Buenos Aires, Argentina

CANADIAN CONSOLIDATED RUBBER CO. REPORT AND ELECTION.

AT an adjourned meeting of the shareholders of the Canadian Consolidated Rubber Co., held at Montreal, Canada, April 22, President Rieder read the report of the directors, which was, in part, as follows:

"Sales for 1918 were the largest in the history of your company, $18,785,640.28, being an increase of 15.08 per cent. over 1917. Of this, $793,403.28 was made for war purposes. Export trade suffered slight reduction due to shipping embargoes. During the year the selling prices on most lines moved upwards, resulting in an average increase of only 9 per cent. over last year. Sales in all departments as well as in all territories in Canada show increases over 1917."

CHARLES B. SEGER,
President Canadian Consolidated Rubber Co., Limited.

Mr. Rieder announced his withdrawal from the presidency and the board of the company, and a resolution expressing appreciation of the services which he had rendered to the company was passed unanimously.

The following directors were elected for the ensuing year: Charles B. Seger, president, United States Rubber Co.; Sir Mortimer B. Davis, president, Imperial Tobacco Co. of Canada; Colonel Samuel P. Colt, chairman United States Rubber Co.; V. E. Mitchell, K. C.; E. W. Nesbitt, M. P.; W. A. Eden; R. E. Jamieson; J. B. Waddell; R. C. Colt; A. D. Thornton; H. Wellein; and Messrs. H. E. Sawyer, J. N. Gunn, E. S. Williams and Ernest Hopkinson, vice-presidents of the United States Rubber Co.

At a meeting of the board of directors, held immediately after the annual meeting, Charles B. Seger was elected president and W. A. Eden and Victor E. Mitchell, K. C., vice-presidents. Walter Binmore was appointed secretary, H. P. Nellis, assistant secretary, Hugo Wellein, treasurer, and J. P. B. Daigneau, assistant treasurer.

The statement of the company, and its constituent companies, excluding all offsetting accounts between the companies, as of December 31, 1918, is here given.

ASSETS.

Cash	$234,485.62	
Accounts receivable	1,834,287.14	
Manufactured goods and materials	9,228,695.98	
Total current assets	$11,297,468.74	
Investments, including good will	5,163,255.50	
Property and plants	8,330,837.06	
Prepaid and deferred assets	513,781.46	
Total assets		$25,305,342.76

LIABILITIES, RESERVES AND CAPITAL.

Accounts payable	$2,160,338.45	
Acceptances payable	145,385.62	
Accrued liabilities	438,997.00	
Total current liabilities		2,744,721.07
First and refunding 5 per cent gold bonds, due January 1, 1947	6,900,000.00	
Bonds 6 per cent due October 1, 1946	2,600,000.00	
		9,500,000.00
Total liabilities		$12,244,721.07
General reserves	99,705.05	
Reserve for depreciation of property and plant	1,454,620.84	
Total reserves		1,554,325.89
Capital stock—preferred	3,000,000.00	
Capital stock—common	2,805,500.00	
Total capital stock	5,805,500.00	
Surplus	5,700,795.80	
Total capital stock and surplus		11,506,295.80
Total liabilities, reserves and capital		$25,305,342.76

INCOME.

Net sales (in Canada and export). Footwear, tires, clothing, general rubber goods, reclaimed rubber and miscellaneous	$18,785,640.28
Cost of goods sold, selling and general expenses, taxes, interest on borrowed money, repairs, depreciations, provisions for bad debts and business profits tax	17,180,789.17
Net profit for period	1,604,851.11
Dividends paid on preferred stock	209,989.50
Net addition to surplus	1,394,861.61
Surplus January 1, 1918	4,305,934.19
Surplus December 31, 1918	$5,700,795.80

FREDERICK W. DUNBAR, CRUDE RUBBER IMPORTER.

EARLY this year, when it was announced that Frederick W. Dunbar had resigned his position as manager of the New York office of Alden's Successors, Limited, of London, England, there was some curiosity in the trade as to his future plans, for it was scarcely conceivable that a man so thoroughly versed in the crude rubber trade could contemplate abandoning it for any other line of business. The question is now settled by the announcement of the new crude rubber importing house of F. W. Dunbar & Co., 280 Broadway, New York City.

FREDERICK W. DUNBAR.

Mr. Dunbar's experience dates back to the middle 'nineties, when he was manager at Pará for Adelbert H. Alden, which house was the branch in that city of the New York Commercial Co., at that time the heaviest rubber importing concern in the United States. Later he was made vice-president of the last-named company, with offices in New York City. In 1914, when the concern was reorganized as Alden's Successors, Limited, of London, England, Mr. Dunbar was appointed American agent, attorney-in-fact, and manager of the New York City office of the company, which position, as stated above, he resigned at the close of the year 1918. His many friends in the trade wish him the highest success in his new business.

CANADIAN BANK BRANCHING OUT ABROAD.

The Royal Bank of Canada, New York City, which already has direct representation in Cuba, is planning to open branches at Rio de Janeiro, Brazil; Buenos Aires, Argentina; and Montevideo, Uruguay. A Parisian branch is also contemplated. and a new branch has just been established at Fort de France, Martinique.

THE PREMIER RUBBER CO., GUELPH, ONTARIO, HAS CHANGED ITS name to The Northern Rubber Co., Limited. Plans have been practically completed for building a four-story factory, 200 by 80 feet, for the manufacture of rubber footwear exclusively. This is the factory which it was recently announced would be built by The F. E. Partridge Rubber Co., Limited.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

THE rubber companies of Akron helped the Fourth Federal District go over the top in the recent drive for the Victory Liberty Loan, in their usual enthusiastic style.

The B. F. Goodrich Co. opened its campaign with a Victory Loan dinner, at which the now famous poem "In Flanders Fields" was recited. L. M. Barton, chairman of the campaign, presided, and outlined the Goodrich schedule. When informed that each rubber company would be allowed a week to make up its quota, the Goodrich officials declared that two days were enough for them. Over 1,400 new employes had purchased $100,000 of bonds before the drive began.

The American Rubber & Tire Co. subscribed its entire quota on the first day of the drive, totaling 30 per cent more than in the previous drive.

Firestone Tire & Rubber Co. made use of its band in raising its quota, totaling over a millions dollars, in a three-day campaign.

The Miller Rubber Co. started its campaign with a series of short speeches, which were enthusiastically received.

The Goodyear Tire & Rubber Co., through officers and employes, subscribed $2,000,000, 19 departments raising from $10,000 to $50,000 apiece.

AKRON NOTES.

The Firestone Tire & Rubber Co., Akron, is planning to develop an athletic field for the benefit of its employes, to be located in Firestone Park, but it is not expected that the plans can be carried out this summer.

* * *

The India Tire & Rubber Co., Akron and Mogadore, has increased its capital from $500,000 to $1,500,000.

* * *

The General Tire & Rubber Co., Akron, is to build an addition to its plant in the near future.

* * *

The Dri-Cure Retreading Co., 405 East Market street, Akron, has been formed by H. B. Houghton, Jr., E. M. Harbin and M. L. Cope, three former employes of The B. F. Goodrich Co. It will distribute the product of the Western Vulcanizer Co., Chicago, in its territory, which includes Indiana, Michigan, Pennsylvania, and New York, as well as Ohio.

* * *

The National Aniline & Chemical Co., Inc., New York City, manufacturer of chemicals for the rubber trade, has opened a branch office in the People's Savings & Trust Building, Akron, in charge of H. H. Replogle.

* * *

The Biggs Boiler Works Co., Akron, Ohio, manufacturer of vulcanizers, et cetera, has purchased the equipment for the new addition to its plant.

* * *

Alexander Adamson, head of the Adamson Machine Co., Akron, and Mrs. Adamson, have donated funds for the purchase of a site for a girl's training school and dormitory at Laoag, Philippine Islands, where their daughter, Miss Vera Adamson, is a missionary.

* * *

Arnold H. Smith, until recently assistant chemist in the Bureau of Standards, Washington, D. C., has resigned to accept a position as research chemist with The Goodyear Tire & Rubber Co., Akron. Mr. Smith is secretary of the Rubber Division of the American Chemical Society.

F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, was unimously reelected president of the Lincoln Highway Association at its annual election.

In the recent balloon race from the naval air station at Wingfoot Lake, Akron, on Saturday, May 10, 1919, the S-20, known as the "City of Akron," was entered by John R. Gammeter inventor of many models for rubber machinery, the Gammeter balloon valve, etc. The S-20 landed near Clayton, Delaware.

CLEVELAND NOTES.

The Union Tire & Rubber Co. has purchased a factory site on the Nickel Plate Railroad, near Chardon Road, Cleveland, where it will build in the near future. R. J. Birch, Hippodrome building, Cleveland, will be general manager.

* * *

The Osborn Engineering Co., Cleveland, reports great activity among rubber companies, which are increasing their factory space or building new plants to take care of additional business.

* * *

The Jackson Tire & Rubber Co., Cleveland, has increased its capital from $10,000 to $20,000.

* * *

A. G. Spalding & Bros., New York City, dealers in sporting goods, have removed their Cleveland store to the Statler Hotel Building.

* * *

Charles R. Sargent & Co., Engineers Building, Cleveland, has been formed by Charles R. Sargent, recently general manager of Stresen-Reuter & Hancock, Inc. The new company has bought the Cleveland end of the business of Stresen-Reuter & Hancock, Inc., in chemicals, oils and colors, and has taken over the employes of the Cleveland branch.

MISCELLANEOUS OHIO NOTES.

The Faultless Rubber Co., Ashland, Ohio, is enlarging its plant to take care of increasing business.

* * *

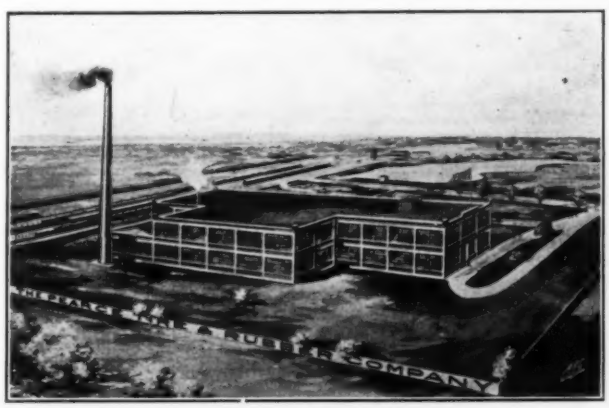
The Rubber Products Co., Barberton, Ohio, is building an addition to its plant, 60 by 100 feet, besides several smaller structures and an office building.

* * *

The Mason Tire & Rubber Co., Kent, Ohio, has recently awarded a contract for an addition to its plant.

* * *

The Pearce Tire & Rubber Co., Ashtabula, Ohio, called a special meeting of its stockholders in April to increase its



PLANT OF PEARCE TIRE & RUBBER CO.

capital stock from $1,000,000 to care for the many improvements it is planning. Two new buildings are soon to be erected, a warehouse and a two-story office building, and a 66-inch calender and two extra mills are to be installed in the present main building, together with three additional

vulcanizers. The officers of the company are: A. M. Pearce, president and general manager; Charles L. Foster, vice-president; M. H. Sullivan, assistant general manager, and W. E. Wilkins, secretary.

* * *

The Toledo Auto Fabrics Co., Toledo, Ohio, has increased its capital from $150,000 to $225,000.

* * *

The Tubeless Tire and Rubber Co., Millersburg, Ohio, has elected the following officers: W. A. Miller, president; G. B. Helmuth, vice-president; O. J. Hicks, second vice-president, and G. A. Jordan, secretary-treasurer.

* * *

The Security Tire & Rubber Co., Wellington, Ohio, manufacturer of the "Security" no-air tube, elected the following directors and officers at its annual meeting: Edwin L. Camp, president; R. B. McInerny, vice-president; George J. Quay, secretary and general manager; S. Sudro, William H. Hill, Harry Gresham and W. W. Parker. The company is now in its third year of operation, having been incorporated in Delaware, in 1916, with a capitalization of $1,000,000.

* * *

The Monarch Rubber Co., Carrollton, Ohio, recently bought the plant of the BeSaw Tire & Rubber Co., at Hartville, including real estate and materials on hand, at an approximate cost of $200,000. The plant has been remodeled and new machinery installed. Additional building equipment is planned to increase the capacity of the plant.

The BeSaw company has no connection with the Monarch concern and will continue to operate its present plant at Ardmore, Oklahoma.

* * *

The Lancaster Tire and Rubber Co., Columbus, Ohio, has increased its capital from $500,000 to $800,000, of which $200,000 is original preferred and $600,000 common stock.

* * *

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has approved plans for the construction of an addition to its present plant, to be of steel, brick and glass, four stories high. Additional ground has been purchased north of the present plant, making a total holding of nine acres.

* * *

The Fidelity Tire & Rubber Co., Massillon, Ohio, has leased the plant of the Kendall Tire & Rubber Co. in that place and will manufacture Ford-size tires.

* * *

The Erie Tire & Rubber Co., Sandusky, Ohio, is having plans prepared for an addition to its factory.

* * *

The Henderson Tire & Rubber Co., Inc., Bucyrus, Ohio, has increased its capital from $200,000 to $350,000.

NEW MAXOTIRE FACTORY.

The K & W Rubber Co., Ashland, Ohio, one of the pioneer manufacturers of tire reinforcements, has purchased more than ten acres of land along the Big Four tracks in Delaware, Ohio, and erected a modern factory for the manufacture of the "Maxotire," a successful inside tire. The accompanying photograph shows the new building, which is devoted exclusively to the making of tire reinforcements. The company has moved its general offices and equipment into the new quarters, and machinery is rapidly being installed with which to run all kinds of rubber stock needed.

FACTORY OF K & W RUBBER CO.

JOHN MORGAN, McGRAW'S VICE-PRESIDENT.

JOHN MORGAN, who was elected a director of The Rubber Association of America at the annual meeting, was born in London, England, in 1880. Educated privately, he was later graduated from the City of London College with honors and completed his education by travel in the different countries of Europe.

JOHN MORGAN.

He became secretary to a leading member of the European Diplomatic Corps, with headquarters in Paris, France, during which association extensive travels throughout Europe enabled him to make a very broad study of the customs and languages of the European nations.

Coming to America in 1905, he became interested in the importation of high-grade foreign automobiles, and perceiving the possibilities of the American automobile industry, he was instrumental in introducing the Kempshall tire into America in 1906. This connection led to his association with The McGraw Tire & Rubber Co., East Palestine and Cleveland, Ohio, with whom he has spent his time exclusively for the past ten years. He was elected treasurer of the company in 1913, and vice-president the following year, which office he now holds. Mr. Morgan has interests also in large textile industries and the manufacture of electrical appliances.

A SPECIALIST IN RUBBER CHEMICALS.

RALPH L. FULLER, of Ralph L. Fuller & Co., Inc., Cleveland, Ohio, is well known throughout the rubber and chemical trades of the United States and Canada.

His introduction to chemicals dates back to the summer of 1880, when he took temporary work with the well-known wholesale drug house of Strong, Cobb & Co., Cleveland, continuing to do so each vacation for five years. In this way, he became familiar with the various chemicals and at the same time acquiring a knowledge of chemistry in school and subsequently at college.

RALPH L. FULLER.

Having finished his college course he returned to Messrs. Strong, Cobb & Co., and was assigned to the order department, then to the position of keeping costs, and finally he was given a permanent position in the sales department. Later he with others formed the Cleveland Commercial Co., of which he was secretary. The success of this business was such that it became necessary to increase the organization and in 1892, the Harshaw, Fuller & Goodwin Co. was organized and succeeded the Cleveland Commercial Co.

Soon after the present war started, it occurred to Mr. Fuller that with the advent of a large number of new manufacturing concerns, particularly of chemicals, a further change in business methods could be adopted to the advantage of manufacturers and consumers of those products, and accordingly, with some of his associates he organized Ralph L. Fuller & Co., Inc., to act

as purchasing and sales agents for various manufacturers and jobbers interested in the purchases and sales of chemicals, oils, pigments, etc. His judgment in this respect has been justified, for the history of Ralph L. Fuller & Co., Inc., seems to indicate that where the finished products of one manufacturer are so frequently the raw materials of another, the bringing together of the two producing firms and production through a common handling agency is mutually advantageous.

Mr. Fuller has a wide acquaintanceship, and hosts of friends. He is a director of the Guardian Savings & Trust Co. of Cleveland, and also the Cleveland National Bank. He is an ex-president of the Cleveland Chamber of Commerce.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

ABOUT the first of last month, it was reported that Lockwood, Greene & Co., had purchased the Roxbury Carpet Co., which purchase included the plant and business of the Boston Belting Corp. Investigation confirmed the sale of the carpet company but that neither the Boston Belting Corp. as such, nor its stock held by the carpet company had been included in the transaction, being still held largely by the Simpson Estate, from which the carpet company was purchased some time ago by Willett, Sears & Co., for a cash payment, it is said, of $700,000, and notes for a like amount.

Mr. Willett later purchased the Boston Belting Co., buying up the stock by paying therefor a sum in cash and an amount of preferred stock in a new corporation named the Boston Belting Corporation. He sold to the Roxbury Carpet Co. the common stock of the belting corporation for $500,000, which money went to pay the above-mentioned cash payments to the belting company's stockholders. It is now understood that the present holders of the majority of the belting corporation stock are anxious to sell the plant and business.

Among the assets of the Boston Belting Corp. is a large block of stock of the Plymouth Rubber Co., which is valued around $50,000, though its face value is somewhat higher. Another possible asset of large value is the water-power privilege which the old company has held for many years, and which, by the terms of its contract, may be bought by the city of Boston within a few years for such sum as may be estimated to be its value at that time.

An other possible asset is a claim of $350,000 against the Industrial Service and Equipment Co., against which a petition in bankruptcy has been filed by the belting corporation and two other concerns formerly controlled by Willett, Sears & Co. The Industrial Service and Equipment Co. was also a Willett-Sears concern, which was placed in the hands of receivers, in equity, last February. It is understood that the dividends on the preferred stock of the Boston Belting Corp., so far, have been paid from the earnings, as they became due and that the corporation is continuing business as heretofore and pushing for foreign trade, with encouraging results.

* * *

The Needham Tire Co., Charles River, Massachusetts, is building a one-story addition to give it 13,000 square feet of additional space for operating purposes. The company is also building a 150-foot smoke-stack to replace its present chimney. An additional 250-horse power boiler and other equipment for making tires are being installed, as well as nine more presses for making fiber soles and rubber heels.

* * *

Everlastik, Inc., manufacturer of elastic webbing, dedicated its new Victory Mill at Chelsea, a suburb of Boston, on April 30, by appropriate addresses, dancing, and refreshments. When the armistice was signed, work was begun on this mill, and in the succeeding five months there has risen a handsome three-story factory of modern mill construction. It will be equipped with warping and winding machinery, as well as looms for making elastic and non-elastic webs, automobile brake linings, etc. The street floor on the Webster avenue side will contain the offices and the machine shop. All the machinery will be driven by individual electric motors, and, of course, the mill will be lighted by electricity. Special attention has been paid to arrangements for the comfort of the employes.

* * *

According to the fourth annual report of the Forsyth Dental Infirmary, that institution continues its philanthropic work among the poor children of Boston, having treated over 25,000 cases during the year 1918, and starting that number of children in the proper way to preserve their teeth. The enforced closing of the institution for some weeks because of the influenza epidemic, and the reducing of the permanent staff because of the call to service in the Army Dental Corps reduced somewhat the number of cases treated. Forsythe Day, the anniversary of the presentation of the loving cup to the surviving founder, Thomas A. Forsyth, for many years connected with the Boston Belting Corp., was celebrated by special clinics which brought together several hundred New England dentists.

* * *

At the annual meeting of the Crocker Rubber Co., held at Brockton, Massachusetts, May 14, 1919, the following officers were elected: president, O. W. Holmes, Brockton; treasurer, H. J. Callahan, Salem—both in Massachusetts, and secretary, M. R. Henry, Providence, Rhode Island. This company specializes in rubber boods of all kinds and has been located in Brockton since 1904. It is one of the eleven stores of the Crocker System. O. W. Holmes has been with the Crocker Rubber Co. for twelve years. Besides his duties as president he will act as manager. Mr. Callahan, the treasurer, holds a like office with the Salem Rubber Co., of which Mr. Henry is secretary.

* * *

The Davidson Rubber Co., Charlestown, has sold to A. Francis Harrington the stock, tools, and machinery of the Sterling Fountain Pen Co., which has been run as a subsidiary of the Davidson Rubber Co. for the past eighteen years. Mr. Harrington, a Boston lawyer, at this writing is sole owner of the pen business, but he proposes to form a stock company, under the name of the Sterling Fountain Pen Co., which will continue the business, with factory and office at 15 Brattle Square, Boston.

* * *

The Berkshire Rubber Co., Pittsfield, Massachusetts, controls or owns The Berkshire Rubber Co. of New York, Inc., The Hoosac Auto Supply Co., North Adams, Massachusetts, and the newly incorporated Holcomb Rubber Co., 713 Albany avenue, Hartford, Connecticut. The officers of the Berkshire company are: Richard Prosser, president, New York; Albert Wurts, treasurer; Frank Prosser, secretary, New York.

* * *

A most effective instance of window advertising of automobile tires was the display staged by the Boston branch of The Miller Rubber Co., Akron, Ohio. The tires were shown in the window of a leading florist's store and the combination of tires, ribbons, flowers and greenery, backed by a landscape which blended with the foreground, was very effective. The name of the tires was just conspicuous enough to advertise them effectively without detracting from the beauty of the display.

* * *

James H. Learned, of the United States Rubber Co., who went to Europe in April on business connected with the rubber thread department, returned the middle of last month. He visited England and France, and, like most Americans now going across, spent a considerable portion of his time ashore in attending to his passport requirements. He experienced the same difficulties as others in regard to traveling and hotel accommodations, but found his customers ready to do business, and reports the outlook for future orders most encouraging.

APPLETON: "ANCIENT AND HONORABLE."

CAPTAIN FRANCIS HAWKES APPLETON, veteran in military affairs and in reclaiming, was born in Jersey City, New Jersey, August, 4, 1853. He attended the public schools of that city, finishing his education at Pennington Academy, Pennington, New Jersey, and after some years in a wholesale grocery house, he entered the employ of the Murphy Varnish Co., Newark, New Jersey, as bookkeeper. After two years in this position he became traveling salesman for the same concern, and during the next seven years sold varnishes in practically every state in the Union. The succeeding six years found him managing the Boston branch of the Murphy company, a branch which he established.

FRANCIS H. APPLETON.

In 1898, Mr. Appleton established a rubber reclaiming factory at Franklin, Massachusetts, and in 1902 he took in his son and namesake as partner, the firm being F. H. Appleton & Son. This concern was afterwards incorporated and has ever since been a prominent factor in the reclaiming industry.

In military and Masonic affairs, Mr. Appleton has been very prominent. He is a veteran of the Seventh Regiment, New York's crack militia regiment, and when he located in Boston he joined the Ancient and Honorable Artillery. He was one of a committee of three who went to England to present to King George V. a certificate of honorary membership in this famous Boston organization. Two years later he was chosen captain at the "drum-head election" held on Boston Common, and in July, at the head of 100 men, sailed on a peaceful invasion of England to hobnob with the parent organization in London, and to dine with the King and other dignitaries.

Mr. Appleton was a charter member of the Rubber Reclaimers Club, being temporary president during the formation of that trade body, and for several years was treasurer. When the club became the Reclaimers' Division of The Rubber Association of America, he was elected chairman, a position he now holds. He is also one of the original members of the New England Shoe and Leather Club.

Mr. Appleton is a 32nd-degree Mason, and is Chief Rabban of Aleppo Temple, Ancient Arabic Order of the Mystic Shrine. He is also a member of the Algonquin, Boston Athletic, City, Commonwealth, Country, and Point Shirley clubs.

PACIFIC COAST NOTES.

THE one topic of conversation among the tire and rubber firms is the sudden reduction in tire prices, which came like a bombshell on automobile row. The announcement of the United States Rubber Co. of a 15 per cent reduction was followed immediately by that of other companies, and the buying public immediately sat up and began to take notice. The report to the effect that this reduction was likely to be followed by another, put a stop to tire buying for the time being, except in emergency cases, and branch managers of the high-grade tire companies professed to be at sea as to the present, although all looked for a further reduction

Meanwhile the companies selling "seconds" and the rebuilding and retreading firms were panic-stricken, realizing there would not be a great demand for their products when users could buy "firsts" for a little more than "seconds" and rebuilts. It is expected that automobile owners will stock up for the summer and fall, as this is the first reduction from the prevailing war prices. There are more automobiles in this part of the state than in all the rest of California and the owners will not be slow to take advantage of the opportunity given them to make a legitimate saving.

One of the large rubber companies states that the reduction is not likely to affect other lines of rubber goods, such as clothing and footwear, and that prices on these may go higher. Automobile owners are asking whether price reduction will extend to other automobile products.

* * *

R. H. Keaton, president of the Keaton Tire & Rubber Co., Akron, Ohio, stopped over in Los Angeles for a few hours, on his way East to attend the opening of a Keaton headquarters in Chicago, Illinois. The Los Angeles branch, now located at 437-39 West Pico street, will be enlarged.

"Our rim business is growing so that we find it necessary to establish a central handling and shipping point in the East," said Mr. Keaton. "We have decided to open a Chicago branch that will enable us to handle our steel shipments better, as well as the 'East of the Rockies' demand for our tires. Our factory output is the only thing that is keeping us back, as we are unable at present to supply the demand."

* * *

E. R. Baker, sales manager, Western Auto Supply Agency, Los Angeles, is handling a device manufactured in that city for carrying a spare tire, which is particularly adapted to the Ford car that comes from the factory with no such appliance. Many Ford users carry their extra tires strapped on the running board or hanging from the side, an expensive way to carry a spare tire which may injure the carcass, to say nothing of the question of appearance.

* * *

The Oldfield Tire Co. has removed its Los Angeles offices to its tire warehouse at 228 Los Angeles street. The new offices and warehouses are large enough to hold nine carloads, or over $360,000 worth, of Oldfield tires and tubes. The Oldfield retail store and vulcanizing shop on Hope street has been sold to Hewitt & Kinslow, experienced tiremen who will continue the repairing and retreading business.

* * *

Max Shiffner of the Tire Company of California, Los Angeles, reports the sale of twice as many tires for the month of April as in any previous month in its history.

* * *

F. C. Milhoff, general sales manager, Miller Rubber Co., Akron, Ohio, who recently spent a few days in Los Angeles, predicts an unprecedented sale of tires during the next few months and declares that millions of dollars of back orders must shortly be filled.

* * *

Thomas L. Rich, agent for Thermoid tires, spent several days on an extended trip through the northern part of his district, and reports a general feeling of optimism in the rubber trade.

* * *

C. Fred Thompson has returned to Los Angeles from a trip among Mason tire dealers throughout Southern California, and reports an increased use of Masons through the desert and mountain country of his district.

* * *

The steady development of the cotton-growing industry in Arizona and the Imperial Valley has at last resulted in the announcement that a Boston textile firm will construct a cotton mill in the Los Angeles-Long Beach Harbor district with spindles sufficient to employ 1,000 workers. It is said an option has been acquired on 20 acres of land and that $3,000,000 will be invested in the project which includes the building of a colony of homes for the accommodation of the workers.

That the project will be greeted as a boon by the cotton growers of the Southwest goes without saying. It is the belief in industrial circles of Los Angeles that cotton raised and baled in Arizona and the Imperial Valley will eventually find its way to the mills of the Orient. It is pointed out that California has every element to make the manufacture of textiles and fabrics profitable, cheap electrical power, abundant labor, the raw product within easy haul, and climatic conditions that manufacturers have come to understand as a compelling economic factor in both mill construction and factory production.

With the growth of the tire manufacturing business in the West, the establishment of a textile factory here seems to be dictated by wisdom and confidence in the future.

* * *

The Bowers Rubber Works, which began business in San Francisco in 1888, has changed its name to the Pioneer Rubber Mills. Its factory is at Pittsburg, Contra Costa County, California, on the Sacramento River, and its general offices are at 68 Sacramento street, San Francisco, while it maintains factory sales offices in Los Angeles, Portland (Oregon), Tacoma and Seattle, Salt Lake City and Denver. The company manufactures "Skookum" piston-rod packing, "Copper Queen" belting and "Victor" fire hose. George N. Towne is vice-president and general manager and D. D. Tripp is vice-president in charge of sales. Mr. Towne visited New York City last month.

* * *

The Savage Tire Corp., San Diego, California, manufacturer of "Savage" tires and "Grafinite" tubes, has made the following promotions and appointments: J. E. Shaw, from assistant sales manager to sales manager; L. S. Chamberlain, assistant sales manager; H. E. Gressler to succeed Mr. Chamberlain as manager of San Diego branch; A. E. Kelley transferred as branch manager from Seattle to San Francisco; J. C. Magly to succeed Mr. Kelley at Seattle.

* * *

The Western Rubber Co., 1143 Dock street, Tacoma, Washington, which for nearly two years has been conducting a tire-rebuilding business, is now planning the erection of a $300,000 unit of its future plant. Elmer Dover is president. He is at present on a business trip East in connection with the new factory. The company uses among other things a special composition of which one of the principal ingredients is fish scrap. Several chemical patents have been issued on this composition.

* * *

An important branch managers' conference was recently concluded in Los Angeles by H. S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, and district manager J. D. Hess, Jr., from the Akron factory. Mr. Hess will spend the greater part of his time here watching the trade conditions of the Pacific Coast branch territories.

* * *

One hundred high-grade rubber tires a day are now being turned out by the Hendrie Rubber Co., Los Angeles, which has again opened its plant at Torrance after a period of inactivity caused by closing down on account of the war. Plans are being made to more than double its capacity and a much larger force of men will be put to work in the next month or two. The company has a large and commodious building with all modern appliances and has laid in a big stock of rubber and fabrics preparatory to starting active work.

* * *

Thomas L. Rich, for years one of the best known tire dealers of Los Angeles, has been chosen as the Southern California distributer of Thermoid casings and tubes.

* * *

Hawley, King & Co., Los Angeles, have been appointed distributers in California, Arizona, and Nevada for the Globe tire. Reeve Gartzmann, general manager of Hawley, King & Co., will supervise the tire department, and H. H. Anderson, formerly of the Firestone organization, is sales manager. A. T. Smith, former manager of the Los Angeles branch and later Pacific Coast manager of the Firestone company, is western manager of the Globe Rubber Tire Manufacturing Co. The Globe company announces that in addition to its fabric and cord tires it will soon manufacture a solid tire as well.

* * *

The Pacific Rubber Co., Los Angeles, has arranged for storehouse facilities for "Horseshoe" tires in San Francisco to facilitate their distribution in the northern part of the state, according to Roy R. Meads, president and general manager of the concern, who has returned from an extended business trip through that section.

* * *

A big shipment of reconstructed tires for Japan has just been made up by the Tire Construction Co. of Los Angeles. "This shows what a tremendous export we may expect in the future," says Edward Harris of that company. "We on the Coast come in contact with the buyers from the Hawaiian Islands, Japan and China, who come here for the latest information on vulcanization methods and repairing."

* * *

F. C. Morrison of the Miller Tire Sales Co. reports eighteen new agencies recently installed in this territory, the latest being that of Goodell & Mead at Pasadena.

* * *

Steward Slosson has been appointed Pacific Coast representative of The Rubber Products Co., Barberton, Ohio, manufacturer of tires and mechanical rubber goods, and will take charge of the company's business in "Stronghold" tires.

* * *

W. H. Gilbert, treasurer of the Pacific Coast division of the United States Rubber Co., San Francisco, according to his usual custom, is spending a portion of the early summer resting in Los Angeles.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

THE Trenton rubber manufacturers are proud of the fact that they went over the top in subscribing for the Fifth Liberty Loan. Their subscriptions amounted to nearly half a million dollars, or to be exact, $423,350. The list follows:

Ajax Rubber Co., Inc.	$100,000
Joseph Stokes Rubber Co.	100,000
Empire Rubber & Tire Corp.	80,300
Thermoid Rubber Co.	40,000
United & Globe Rubber Co.	30,000
Home Rubber Co.	17,500
DeLion Tire & Rubber Co.	15,650
Essex Rubber Co.	9,000
Whitehead Brothers Rubber Co.	8,850
Woven Steel Hose & Rubber Co.	5,950
Semple Rubber Co.	5,800
Globe Rubber Tire Manufacturing Co.	5,300
Mercer Rubber Co.	5,000
	$423,350

* * *

The United & Globe Rubber Co. will erect a brick addition to the plant on Frazer street, Trenton.

Horace B. Tobin, secretary and treasurer of the United & Globe Rubber Co., Trenton, and who is also president of the Trenton Club, recently entertained the members of that organization at the Country Club at Spring Lake, New Jersey.

* * *

The Atlas Tire & Rubber Co., Trenton, has begun work on its new $250,000 plant on Enterprise avenue. Work will be rushed to completion and machinery installed as soon as possible. The company will manufacture automobile tires and tubes, and employ about 200 persons at the start. One

of the structures will be 90 by 360 feet; another, the engine and boiler room, will be 82 by 92 feet. There will be an 800-foot siding. Henry A. Ludeke is president of the Atlas company; Ira Worthington, vice-president, and R. Unkles, secretary.

* * *

At the annual meeting of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, Joseph B. Linerd was reelected president. He is said to be the youngest president of any such important enterprise in this country. Young as he is, however, he has had a good business experience. Previous to his connection with the Globe company, he held various responsible positions with the Goodyear Tire & Rubber Co., Akron, Ohio, and later became sales manager of the Ajax Rubber Co., Inc., Trenton, New Jersey. In 1916, he reorganized the Globe Rubber Tire Manufacturing Co. and served first as its general sales manager, later being chosen president, to which office he has just been reelected.

JOSEPH B. LINERD.

* * *

Solomon J. Lewis, representing the Sturdy Tire & Rubber Co., of Trenton, recently returned from Havana, Cuba, where he closed a $300,000 contract with the Caribbean Agencies.

* * *

The Eureka Tire Co., 26 West State street, Trenton, New Jersey, whose plant is on Whitehead's Road, has filed a certificate of dissolution in the office of the Secretary of State, as agreed upon by the stockholders.

* * *

The New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey, has elected the following officers and directors: G. W. Stephens, president: F. H. Smith, vice-president and general manager; E. E. Dearth, secretary; Charles Hoffman and Jesse E. La Dow, counsel; directors—John J. Fields, F. H. Smith, E. E. Dearth, Jesse E. La Dow, Charles Hoffman, G. W. Stephens and P. H. Ober.

* * *

William J. B. Stokes, head of the Thermoid, Stokes and Home Rubber companies, Trenton, who was chairman of the Fifth Liberty Loan Committee, will shortly entertain those who aided him in the work.

* * *

Alfred Whitehead, secretary of Whitehead Brothers Rubber Co., Trenton, was chairman of the rubber manufacturers' division of the Salvation Amy drive.

* * *

The storehouse of the Empire Rubber & Tire Corp., Trenton, was badly damaged by fire on May 19, the principal loss being caused by water from the sprinkling system.

* * *

Samuel E. Lavery, formerly manager of the Allentown, Pennsylvania, branch of the United Tire Co., has purchased a building on West End avenue, Trenton, and will conduct a plant there.

* * *

Harry L. Midler, formerly owner of the Midler Auto Supply Co., Trenton, has been held in the Federal Court on a charge of perjury in bankruptcy proceedings. He was held in $1,000 bail. A petition in bankruptcy against the Midler company was filed by the Pennsylvania Rubber Co. early in 1918.

* * *

The plant formerly occupied by George F. Lufberry, Jr., Meadow Lane, Elizabeth, New Jersey, has been sold to the Lowenstein Radio Co., of Newark. The transaction involves nine acres of land and twelve buildings.

* * *

The Victory Tire & Rubber Co., 385 East 149th street, New York City, has plans for the erection of a tire plant on Railroad avenue, Asbury Park. The building will be two stories high, 75 by 165 feet, and will cost $125,000.

* * *

Elgin L. McBurney, receiver of the Indian Tire & Rubber Co., New Brunswick, has made application to the Court of Chancery for permission to borrow $5,000 on a receiver's certificate. An order to show cause why the court should not allow this and order the business to continue for the disposal of the property of the corporation has been obtained by some of the stockholders. It is alleged that the assets of the company total $107,115, and its liabilities $65,000.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

WHILE the several plants manufacturing rubber goods in Rhode Island have many orders on their books, they also have more or less stock on hand and are playing somewhat of a waiting game. Advantage is being taken of this to make repairs, renovations, improvements, and additions as well as complete accounts of stock of every description which have not been taken as thoroughly as usual for the past two years or more because of the drive under war conditions.

In common with other industries the rubber manufacturers are finding much difficulty in securing experienced help to fill numerous places that are vacant. Several hundred employes left the several plants to go into the service of the country, either as volunteers or draftees, and it is expected that with their return they would seek their former positions. This has not proved to be the case, however. While a few have applied for and resumed their former employment, a large majority do not desire to resume indoor work, and so are seeking for something to do outside.

* * *

The efforts to take Rhode Island over the top in the Fifth Liberty loan by the subscription for a quota of $37,000,000 of Victory Notes gave all industrial interests considerable activity. Early in the campaign the announcement was made from New York that the United States Rubber Co. had subscribed for $2,500,000 of the bonds, of which $1,500,000 was to be credited to the various States where the company had plants. Later it was announced that of this sum $500,000 had been credited to Rhode Island. In the distribution Providence, where the Revere Rubber and Mechanical Fabric Companies are located, received credit for $200,000, while Woonsocket with the Woonsocket Rubber Co.; and Bristol with the National India Rubber Co., each received credit for $150,000.

* * *

Edward P. Gwillam, of Newark, N. J., appeared before Judge Arthur L. Brown in the United States District Court this city, about the first of the month and pleaded not guilty of conspiring to bribe a United States official. He was released when $1,500 bail was furnished. Mr. Gwillam is general manager of the Newark Raincoat Co., whose local representative, Samuel Levison, was arrested here last summer on charges of attempting to bribe a United States officer in connection with a raid that was made. Mr. Levison informed the Government officials here that Mr. Gwillam conspired with him in the bribing.

The shoe division of the National India Rubber Co.'s factory at Bristol, was closed on Friday, May 16, for two weeks, resuming Monday, June 2. The announcement was made by the management that the shut-down of the two sections of the division was to curtail production and for general repairs. During the period of the shut-down the company continued to make samples and small productions of particular grades of shoes.

* * *

The Revere Rubber Co. of the United States Rubber System, has just added another plot of land to its holdings on Valley and Eagle streets, Providence. It is located at the northeast corner of the two thoroughfares and contains 3,506 square feet. It is a valuable acquisition as it completes the holdings of the concern on that block.

* * *

The Davol Rubber Co. of Providence, has just received a large contract to furnish ice bags to the Medical and Hospital Supplies Division, Office of the Director of Purchase and Storage, at Washington.

CONNECTICUT NOTES.

The Raybestos Co., Bridgeport, Connecticut, manufacturer of brake linings and clutch facings, is building a one-story brick and steel addition to its factory, 160 by 170 feet, to cost approximately $75,000.

The Goodyear Rubber Co., Middletown, Connecticut, is expending about $10,000 in enlarging its cutting room.

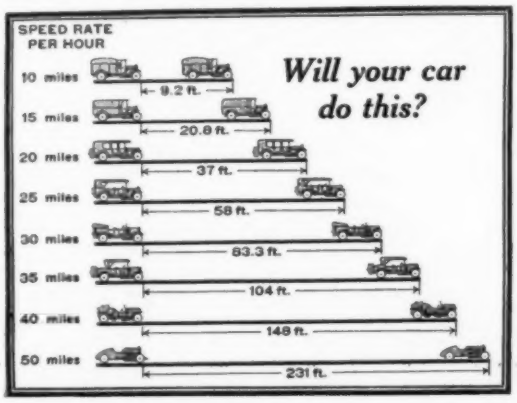
The New Haven Sherardizing Co., New Haven, Connecticut, has increased its capital from $30,000 to $50,000.

NEMOURS TRADING CORP. OPENING FOREIGN OFFICES.

The Nemours Trading Corp., 151 Fifth avenue, New York City, recently incorporated to do a general export business, in addition to its branch offices in the principal foreign cities, has opened a house in Mexico City and will open others in Johannesburg, South Africa, and Melbourne, Australia, early in the autumn. W. P. Berrien, export sales manager, was for eight years connected with the Firestone Tire & Rubber Co. Among other products the Nemours corporation will specialize in Perfection tires, made by the Perfection Tire and Rubber Co., Fort Madison, Iowa.

WHAT GOOD BRAKE LININGS SHOULD DO.

The accompanying chart, published by the Thermoid Rubber Co., Trenton, New Jersey, and showing the distance within which it should be possible to stop an automobile traveling at various speeds when equipped with suitable brake linings, is of interest to associations, railroads, and motorists in general. It was prepared to show in a graphic manner how directly the safety of the car and the security of all who ride depend upon the brake linings, and also to provide a fair and reliable test which every motorist can easily make with his own car.



A RUBBER RESEARCH SPECIALIST.

AMONG AMERICAN RUBBER CHEMISTS the name of George D. Kratz is recognized as that of a rubber research chemist of ability. Following his graduation from Cornell University in 1912 with the degree of Bachelor of Chemistry, Mr. Kratz began his professional career with the former Diamond Rubber Co. in his native city of Akron, Ohio, continuing as one of the laboratory staff of The B. F. Goodrich Co., after the absorption of the former concern by the latter. In 1914 he became chemist of the Norwalk Tire & Rubber Co., Norwalk, Connecticut, three years later assuming the duties of chief chemist of the Falls Rubber Co., Cuyahoga Falls, Ohio, which position he holds at the present time.

GEORGE D. KRATZ.

In research work Mr. Kratz has been associated with Dr. David Spence and in collaboration with him has had published many articles on chemical research. He has contributed frequently to the "Journal of Physical Chemistry," the "India Rubber Review," and THE INDIA RUBBER WORLD.

He is a member of the American Chemical Society, The New Jersey Chemical Society, the University Club of Akron, and the Cornell University Club, New York City.

THE OBITUARY RECORD.

A RUBBER MAN OF THE THIRD GENERATION.

JOHN V. ALDEN died at Buffalo, Wyoming, May 12, in his 31st year. He was the only son of Adelbert H. Alden and grandson of the late George A. Alden, the well-known rubber merchants, and at one time was president of the Seamless Rubber Co., New Haven, Connecticut. His health failing, he went west some years ago, and it was thought he was recovering. He came East to welcome his father on the latter's return from abroad a short time ago, but death took him soon after his return to Wyoming.

A PROMINENT FABRIC COMMISSION MERCHANT.

Augustus D. Juilliard, senior member of A. D. Juilliard & Co., New York City, manufacturers and distributers of cotton fabrics for the rubber goods manufacturing trade, died at his home in that city, April 25, 1919, after a brief illness.

He was the son of Jean Nicholas Juilliard, a native of Burgundy, France, who came to America in the early 'forties. Born in Canton, Ohio, seventy years ago, Augustus D. Juilliard early identified himself with the textile commission business. In 1873 he was appointed receiver for Hoyt, Sprague & Co., at that time the largest commission house in New York City, and soon after organized his own company. During the presidential campaign of 1896 he became prominent as a strong protectionist and a friend and ardent supporter of McKinley. Later he became prominent in connection with banking, trust and insurance interests, and was a liberal patron in musical, artistic, scientific and educatonal movements. He organized the American Protective Tariff League, and maintained its high protective principles in all legislation regarding the textile industry.

Mr. Juilliard was a member of the Metropolitan, Union League, Tuxedo, City, Republican, Merchants, and the New York Athletic Clubs, the Ohio Society of New York, and the Huguenot Society of America.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE only feature of new interest in the present low-level price of rubber is the attention being given to finding some new uses for it. The Rubber Growers' Association is moving in the matter, but the prize scheme it is said to be preparing has not yet seen the light. It seems obvious that something besides rubber pavements will be required to absorb rubber to the extent desired, and the position as regards the price of finished articles is not the same as it was when the rubber pavement was being advocated some years ago as a panacea for increased output. The new expenses associated with labor have to be considered, and it may be that they will press more heavily upon rubber as a pavement material than upon its present competitors.

In contrast to what has occurred in some industries, demobilized rubber workers are being regularly reinstated in their old jobs, the positions being vacated by the women workers who had occupied them. A point which came up at a recent general meeting of the Whitley Council was in regard to the propriety or expediency of replacing women by temporary men until the original holder of the position was available. A prominent rubber manufacturer, who said that he was reducing the woman staff regularly in favor of returned men, agreed with Mr. Duke, the rubber workers' secretary, that it was not advisable to dismiss women in favor of temporary men. Among those who are drawing the much-talked-of out-of-work donations are a good many rubber workers, mostly from the proofing side. These do not come from works generally, as some firms have not dismissed any hands. The fact is at this time of general upset that some firms are busier than others. Although the war rush has, of course, subsided, Government peace orders are coming forward as usual and these are naturally on a larger scale than they used to be. Under present conditions some firms have much of their work on hand, while others may have little or none, hence the effect on the labor required at different works.

NEW WORKS.

Now that the government restrictions on the issue of capital for new ventures have been removed, as far as Great Britain is concerned, we may expect to see some schemes put before the public. A recent one is the offer of £200,000 8 per cent cumulative participating preference shares in Fuller's United Electric Works, Limited. Part of the works which are at Chadwell Heath, Essex, were started during the war for the manufacture *inter alia* of ebonite, insulated electric cables and carbon black, and seem to have made very good progress, being helped naturally by the scarcity of ebonite and gas black. The fact that the four companies which are now merged into one earned 30 per cent upon their capital in 1918 must of course be looked upon by investors in the light of war demands and prices and the absence of difficulties of foreign competition. The names of the companies now merged are: John C. Fuller & Son, Limited (founded in 1875 at Bow, London); the Fuller Accumulative Co., Limited; Fuller's Wire & Cable Co., Limited, and Fuller's Carbon & Electrical Co., Limited.

EFFECT OF REDUCED HOURS ON OUTPUT.

In view of the reduced number of hours now in force in rubber factories, I asked a manufacturer the other day if it was his experience that there was no falling off. His answer was that the general results are much the same, mainly because better time is now being kept by hands who persistently lost time in the past by not turning up regularly before breakfast. With respect, however, to the regular and steady workers the output certainly shows a diminution. The claim that the output will be the same with a reduction in hours of work has really been negatived by the workers in their demand for a 10 per cent advance on piece-work rates. This has been granted locally in several cases by virtue of a special clause in the Whitley Council regulations. The 47-hour week is now uniformly adopted throughout the rubber trade, and it has this good effect, that one manufacturer knows that another cannot gain an advantage over him by working a longer week, as was the case in the past. Although manufacturers now have to spend a good deal of time attending meetings and seeing to a new class of correspondence, the general opinion seems to be that it is worth it if the dislocation of business caused by strikes is done away with.

An important part of Mr. Porritt's recent lecture on rubber at the Royal Society of Arts dealt with the new problems of labor in the factory. Cheap labor, he said, is now a memory of the past and manual operations will have to be performed more efficiently or supplanted by mechanical processes if the new conditions are not to be reflected in unduly increased costs of production. While unnecessary labor will have to be eliminated, that which is essential should be made more efficient.

SOCIETY OF CHEMICAL INDUSTRY.

I referred recently to the somewhat belated report of the Society of Chemical Industry for 1917, and now have a word to say regarding that for 1918, which has appeared more promptly. The chapter on india rubber is written by Dr. Twiss of the Dunlop Rubber Co., Limited, instead of by Dr. H. P. Stevens, who wrote the two preceding ones, a change of authorship having been made in several of the subjects in order to get new points of view. Despite the change from a consulting chemist to a works chemist, with a naturally wider purview of "applied chemistry," there is no extensive lifting of the veil on matters intimately concerned with rubber manufacture, a remark which applies equally to many other subjects treated of in the volume. We have, however, a useful and succinct summary of matters of technical importance of special interest to those who have omitted to read their trade journals carefully throughout the period under review.

With regard to the published list of accelerators for vulcanization, Dr. Twiss points out that its length is apt to be misleading because in some cases the same chemical substance appears several times under different trade names. He makes the important observation that very little definite information is available as to the influence of accelerators on the aging of vulcanized rubber, and still less as to the possible influence of the proportion of free sulphur on the activity of the accelerator. Speaking of reclaimed rubber, he says there is a tendency towards open acknowledgment that the essential effect is purely a thermal one and that the various chemical operations used in conjunction with heat are unnecessary. The main objection to a more general acknowledgment of this lies, I think, in the fact that it knocks the bottom out of a good many patents. The 1918 patent of the Dunlop Rubber Co., Limited, and D. F. Twiss depends on thermal treatment with avoidance of oxidation effects and not on any specific chemical reaction. Perhaps some pronouncement on this important matter will come from America, the home of reclaiming. The paragraph on analysis is somewhat thin, touching as it does on only one topic—the extraction of rubber with acetone. Reference is made to the fact that when the resin contents of a rubber is known and is non-variable the free sulphur in an acetone extract is obtained by simple subtraction instead of a tedious estimation. I imagine that this procedure is by no means a novel one, though, of course, it has

its strict limitations in practice. Attention is drawn in a paragraph on raw rubber to the fact that although most of the moisture which may be retained in rubber is expelled in mastication, the whole of the natural moisture in plantation rubber is not removed and that the 0.2 or 0.3 per cent which is retained is liable to cause porosity unless the surrounding pressure in vulcanization is maintained greater than the vapor pressure of the dissolved water.

HENLEY'S TELEGRAPH WORKS, LIMITED.

The net profit of this old-established business, now in its forty-first year, was £148,054 for 1918, against £162,867 in 1917, and the dividend is 15 per cent against 25 per cent. It should be noted, however, that a year ago the capital was raised from £200,000 to £400,000 by the capitalizing of £200,000 from the reserve fund, the shareholders receiving bonus shares. The motor tire business, which was started a few years ago, was transferred to a new company on August 1 last and this has naturally affected the net balance. In the accounts provision has been made for special depreciation on machinery bought for war purposes, which it is stated will now be useless or of problematical value.

MISCELLANEOUS FOREIGN NOTES.

DEMAND FOR RUBBER FOOTWEAR IN SCOTLAND.

THE "Weekly Bulletin of the Canadian Department of Thade and Commerce" reports an active demand in Scotland for ordinary galoshes and storm galoshes of broad-toed shapes, hip boots and top boots, gray canvas gymnasium shoes, and light sand shoes. There is little call for the strap-sandal or low-cut rubbers, for pointed shapes, or for white or brown goods.

RECLAIMED RUBBER FROM ITALY.

During 1917 there was exported from Turin to the United States reclaimed rubber to the amount of 543,429 pounds, value $130,154, as against 72,211 pounds in 1916, value $101,532.

RELATIVE IMPORTANCE OF FRENCH FAIRS.

The leading three French fairs being held this spring have three distinct aims, though each is naturally local and national in character to a certain extent. The Lyons Fair, held March 1-15, 1919, is chiefly international, purposing to substitute the Leipzig Fair; the Paris Fair, held April 25-May 10, 1919, is principally national; and the Bordeaux Fair, to be held May 31-June 15, 1919, is chiefly colonial. This feature of the Bordeaux Fair is natural when it is remembered that approximately one-third of the merchandise bought for and imported into the French colonies, as well as of the products exported from those same colonies, is handled by Bordeaux firms and shipped via Bordeaux.

RUBBER IMPORTED INTO DENMARK.

Figures for the month of December, 1918, and for the year 1918, show that during those respective periods Denmark imported crude and manufactured rubber as follows:

	Kilos.	
	December, 1918.	Year 1918.
Crude rubber	900	5,900
Tires and other rubber goods	23,400	61,400
Totals, imports	24,300	67,300

THE SCANIA FAIR AT MALMO, SWEDEN.

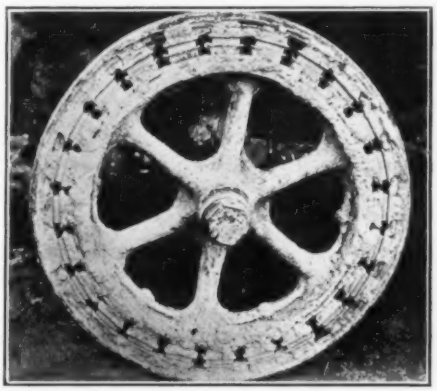
The Scania Fair, to be held at Malmö, Sweden, June 30-July 6, 1919, is primarily a manufacturers' exhibit, its object being to bring together the producer and consumer. The exhibits will be divided into thirteen groups, of which group 8 comprises rubber and leather goods, and group 13, known as the technical department, will cover inventions, patents, materials, etc., to be used in the manufacture of other goods. This fair is open only to Swedish industry, but many Danish and German interests will be represented through Swedish agents, and some American houses likewise. There is considerable demand in southern Sweden for rubber goods, belting, and other products.

MARKET FOR RUBBER GOODS IN SWEDEN.

The Swedish Consulate at Göteborg calls attention to the demand in Sweden for inner tubes and tractor tires; belting of all kinds; rubber goods; and waterproofed coats. Catalogs in quadruplicate are desired.

A GERMAN PLAN TO SAVE RUBBER.

An interesting device of the Germans to secure something of the resiliency afforded by a rubber tire with the minimum amount of rubber is shown in the accompanying illustration. This wheel is of a type much used by the Germans during the war to economize in the use of rubber. The rim is of steel and the pads between the rim and the felloe are made of rubber. The picture is from a United States official photograph taken at Speicher, Germany.



RUBBER-PADDED STEEL WHEEL.

TIRE MANUFACTURE AND MARKET IN GERMANY.

A Swiss consular report of conditions in Germany at the present time remarks that the scarcity of cotton in Germany will make it impossible to manufacture pneumatic tires for some time. It is expected that large amounts of crude rubber stored in neutral countries will be released with the signing of the peace treaty. Solid rubber tires will then be manufactured.

The synthetic rubber so much vaunted proved during the war to be useful chiefly for insulating purposes in the construction of submarines, torpedo boats, electrical engines, etc., but it failed to relieve or in any way affect the tire situation. This was due to its lack of resiliency and durability and also to the high cost of production.

It is believed that Germany will offer a good field for American automobiles, trucks, and tires, as the number of prospective buyers is constantly increasing.

It is pointed out that the customary appointment of a foreign importer as agent or sole agent on condition that he buy outright or guarantee to sell a certain number of cars or tires yearly will not result in the establishment of a permanent market. This is due to the fact that the foreign importer is generally unfamiliar with the car or tires, and has no further interest in them or the satisfaction of the buyer, once the goods are sold.

The only means of creating a lasting market is that of establishing an American agency in the prospective foreign territory. Great care should be given to the selection and location of a principal office and sub-agencies, etc.; also, to selecting salesmen of experience in the automobile and tire business, familiar with the country, people, language, methods of procedure, and organization of the German automobile industry.

The Rubber Trade in Japan.

By a Special Correspondent.

THE great impetus given to the Japanese rubber industry by the war is reflected in the rapidly increasing crude rubber imports. As shown by the accompanying official statistics, the 1918 imports represent an increase of 7,966,517 pounds, value $1,909,006, over the 1917 imports; 9,729,520 pounds, value $2,761,114, over the 1916 imports and 12,457,352 pounds, value $4,758,321, over the 1915 imports. The rates of increase for the several years were, in quantity, 95 per cent. in 1918, 132 per cent. in 1917, and 302 per cent. in 1916; in value, 42 per cent. in 1918, 76 per cent. in 1917, and 236 per cent. in 1916.

These imports do not indicate the actual demand of the rubber industry, however. Contrary to the previous custom of buying crude rubber in the various eastern markets as needed, Japanese firms have taken advantage of the low ruling prices and accumulated considerable stocks in anticipation of a rise under improved peace-time conditions. Japan now has her own crude rubber quotations, and at times prices have been more favorable than those ruling at Singapore for the same grades.

MARUBOSHI RUBBER WORKS, TOKIO, JAPAN.

Japan's rubber commerce has grown remarkably of late.

IMPORTS OF CRUDE RUBBER.

	1917		1918	
	Pounds.	Value.	Pounds.	Value.
From British India...	1,616,131	$988,285	$26,168	$234,207
Straits Settlements ...	6,185,569	3,142,527	15,248,181	5,938,066
Dutch East Indies....	78,209	44,500	274,716	73,775
Great Britain	347,326	266,845	148,652	126,281
United States	123,301	101,211	94,465	81,160
Other countries	43,849	21,745	68,720	20,630
Totals.....	8,394,385	$4,565,113	16,360,902	$6,474,119

The Japanese rubber manufacturing industry has so expanded in recent years that exports of rubber goods now greatly exceed imports. Insulated wire, tires, toys, and balloons are the lines which have been developed chiefly, so that the imports of rubber manufactures shown by the accompanying statistics consist chiefly of other goods not yet produced in Japan at all, or not in sufficient quantity to meet home demands.

IMPORTS OF RUBBER MANUFACTURES.

	1917		1918	
	Pounds.	Value.	Pounds.	Value.
Reclaimed and unvulcanized rubber.	136,165	$20,673	47,290	$9,656
Dental rubber	19,953	49,477	23,284	54,097
Soft rubber—				
Rods and cords.....	84,610	42,727	149,865	106,858
Plates, sheets and tubes.....	250,012	86,648	344,252	144,709
Threads, strips, bands, rings and washers	44,786	62,914	108,886	102,651
Other soft goods.....	106,285	57,641	172,394	98,473
Other rubber goods.....	49,140	27,680	33,677	31,074
Bicycle tires	2,756	2,673	424	560
Insulated wire—				
Submarine cables	.....	.....	.....	3,325
Other armored cables.....	11,312	1,492	10,005	3,821
Other wires	45,845	23,963	58,717	35,108
Woven belts and hose.....	213,836	157,629	231,029	198,842
Waterproof sheeting	14,184	12,957	8,669	6,764
Elastic webbing	.....	50,642	.....	79,798
Insulating tape	35,910	13,160	24,566	11,923
Totals	.....	$610,276	.....	$887,659
Scrap rubber	.....	137,657	.....	86,254

In addition to the above imports of rubber goods for 1917 and 1918, automobiles and parts, including tires, were imported to the value of $3,830,906 in 1918 against $1,984,457 in 1917.

In 1912, rubber goods imports reached their highest mark, but with the growth of the Japanese manufacturing industry, and on account of shipping difficulties, these imports have decreased. A customs tariff of 20 to 40 per cent. ad valorem will not tend to increase the volume of these imports under peace conditions.

Excellent automobile and motorcycle tires are now made by the Japanese in Japan and bicycle tires also. In 1918, automobiles were imported largely in the form of parts and assembled in Japan. They will be in large demand in the near future, having been recognized as a necessity rather than a luxury, as they were formerly regarded in Japan.

There were also exported 2,651 jinrikishas ($71,133) in 1918, against 6,854 ($144,752) in 1917; also 7,408 bicycles and parts (exclusive of rubber tires) to the value of $2,161,334 in 1918, against 5,352 valued at $1,219,409 in 1917. Jinrikishas for China, Hongkong, Straits Settlements and British India show a gradual decrease figure, as they were exported as parts, not as completed vehicles, in order to avoid payment of import duties and to reduce the cargo charges. The increased use of automobiles is also affecting the sale of jinrikishas.

EXPORTS OF RUBBER GOODS.

	1917		1918	
	Pounds.	Value.	Pounds.	Value.
Insulated wire	4,601,544	$1,559,456	12,742,382	$4,162,167
Rubber tires	2,901,633	2,021,815	3,261,324	2,253,469
Rubber toys and balloons.	.....	114,210	.....	383,270
Other rubber manufactures	.....	307,115	.....	612,600
Totals	.....	$4,002,596	.....	$7,411,506

Owing to the shipping difficulties of Japanese rubber goods exports have increased year by year until the Japanese rubber manufacturing industry has become large enough to supply the lack of European and American goods in China, Manchuria, Malaya, British India, Oceania and Australia.

There is a difference of opinion as to the effect of peace on this foreign trade. Some believe that with better shipping conditions, European and American goods will be pushed into these Far East markets to the detriment of Japanese business; others, that the proximity of these markets to Japan and the lower wage scale in Japan place her in an advantageous position to continue and develop this business. The prohibition of imports of Japanese rubber toys by both the United States and Great Britain, which became effective in April of this year, has been a hard blow to Japanese rubber manufacturers, many of whom specialized in balls, dolls and balloons.

NEW ASSOCIATIONS.

Several new trade associations have been formed that are identified with the rubber industry in various ways. Some three hundred makers of toys of rubber, wood, cotton, cloth, paper, celluloid and metal in Tokio have organized the Tokio

Export Toy Makers' Association. In the department of rubber toys, The Mitatsuchi Rubber Manufacturing Co., The Nippon Rubber Co., Limited, and S. Yamada, director of the "Gomusekai" ("Rubber World") were elected to the council. The office is at Sakuragicho, Shitaya, Tokio.

Rubber manufacturers by hot vulcanization methods in Osaka-Fu and Hyogo-Ken (Kobe district) have organized the Osaka-Kobe Rubber Industry Association. The directors are The Kakuichi Rubber Co., The Chugai Rubber Co., Limited, Teikoku (Imperial) Rubber Manufacturing Co., Limited, Settsu Rubber Co., Limited, Naigai Rubber Co., and Hanshin Rubber Works. The office is at 190, Kita-3 chome, Kamifukushima, Osaka.

Rubber goods traders in Osaka have organized the Osaka Rubber Association. The office is at 190, Kita-3 chome, Kamifukushima, Osaka, the same address as that of the Osaka-Kobe Rubber Industry Association.

Rubber traders in Kyushu have organized the Kyushu Rubber Association, at 43, Shimonishimachi, Fukuoka City. Kyushu is an island to the southwest of Nippon and about the area of Belgium.

About three hundred rubber manufacturers, dealers, crude rubber brokers and scrap rubber dealers in Tokio have organized the Tokio Rubber Association with headquarters at Hamacho, Nihonbashi, Tokio.

Manufacturers in Shibuya, Tokio, have organized the Shibuya Rubber Association with an office at 1309 Shimoshibuya, Tokio.

MARKET PRICES.

Owing to the war, the prices of compounding ingredients have risen from 20 to 200 per cent, while the prices of rubber goods generally have also risen 20 per cent. Since the beginning of this year, the price of naphtha has gradually risen to threefold in April, and manufacturers of waterproof cloths, nipples, balloons, etc., were obliged to raise their prices from 20 to 35 per cent.

EXHIBITIONS.

The Electric Exhibition was held from March 20 to May 10, and insulated electric wires and cables, insulating tapes, ebonite and rubber goods were exhibited by the Mitatsuchi Rubber Manufacturing Co. (Tokio), The Nippon Rubber Co., Limited (Tokio), Fujikura Electric Wire Co., Limited (Tokio), Nippon Electric Wire and Cable Works, Limited (Tokio), Yokohama Electric Wire Works, Limited (Yokohama), Tsuda Electric Wire Works (Kyoto), Sumitomo Electric Wire Works, Limited (Osaka).

In April, the Chemical Industry Exhibition was held in Osaka and rubber goods were exhibited by rubber traders and manufacturers in Osaka and Kobe.

NEW JAPANESE INCORPORATIONS.

Sumatora Rubber Plantation Co., Limited. Capital, $1,000,000, one-fourth paid in. Plantation, 5,000 acres; office, 23 Satsumahori-Hirashinocho, Osaka.

Takushoku Rubber Co., Ltd. Capital, $250,000, one-fourth paid in. Office, 18 Kamiya-cho, Shiba, Tokio.

The Fuji Trading Co., Limited, to trade in crude rubber. Office, 3 chome, Sanjitkenhori, Kyobashi, Tokio.

The Taiyo (Sun) Rubber Co. (Ltd.), originally established on a small scale under the style of The Taiyo (Sun) Rubber Works, has increased its capital to $250,000 and incorporated as a stock company. Office, Oshimamachi, Tokio.

Masuda Co., Limited. Capital, $1,000,000. Office, 68-9, 4 chome, Honcho, Yokohama. To engage in general trading, especially in crude rubber. Branch offices in Tokio, Osaka, Kobe, Nagoya, etc., in Japan, and in London (England), Melbourne and Sidney (Australia), Shanghai, Dairen, Tensin, Hankao (China), Calcutta and Singapore.

Nichinan Rubber Co., Limited. To plant in Johore. Capital, $100,000, two-fifths paid in. Office, 44 Samoncho, Yotsuya, Tokio.

Shino Rubber Co., Limited. Capital, $750,000. To plant in Johore. Office, 5 Nishikonyacho, Kyobashi, Tokio.

Borneo Rubber Co., Limited. To plant in Borneo. Capital, $1,000,000, one-fourth paid in. Office, No. 18, 1, 1 chome, Yurakucho, Tokio.

Chugai Rubber Co., Limited. Capital, $75,000. To manufacture rubber goods. Purchased The Alenken Rubber Works, situated at Toyosakimachi, Osaka.

Takasago Industry Co., Limited, was established with a capital of $125,000, one-fourth paid in, purchasing The Taiheiyo Rubber Co., Limited, Tokio, to manufacture rubber goods and electric batteries.

Keihoku Rubber Works. Capital $10,000. Purchased The Eastern Rubber Co., Tabata, Tokio. To make rubber toys, etc.

Johore Rubber Co., Limited. Capital, $125,000. Purchased T. Okabe's plantation in Johore. Office, 4 Maruyacho, Kyobashi, Tokio.

Fuji Rubber Manufacturing Co., Limited. Capital, $1,000,000, one-fourth paid in. Office, Oi-machi, Tokio, to manufacture patent rubber sponges and tires in which rubber sponge stock replaces the inner tube.

Sakura Rubber Co., Limited. Capital, $250,000. Office, No. 10 Gofukucho, Tokio. To manufacture rubber goods.

Takasago Rubber Co., Limited. Capital increased to $90,000. Products, rubber balls, tubing, etc. Office and works, Zoshigaya, Tokio.

Nankoku Rubber Co., Limited. Capital, $50,000, one-fourth paid in. Baron H. Shimazu is president.

Nan-a Co., Limited. Capital, $500,000. Amalgamated with the Malay Rubber Plantation Co., Limited. Capital, $250,000, both being Japanese rubber plantation companies in Malaya.

Victor Rubber Co., Limited. Capital, $30,000, one-fourth paid in. To make air pillows, ice bags, etc. Office, 187 Tsunohazu, Yodobashi, Tokio.

Tokio Belt Co., Limited. Capital, $150,000, one-fourth paid in. Office, 101 Taniyama, Osaki, Tokio. To manufacture rubber belting and other rubber goods.

Hanto Rubber Co., Limited. To plant rubber in the Malay Peninsula. In August it was dissolved because of the law prohibiting the sale to foreigners of land in Malaya. The remaining business is to be settled by the liquidator of the company in Kobe.

Nitto Rubber Co., Limited. Capital, $250,000, one-fourth paid in. Office, Makino, Nagoya, to make rubber tires.

Yachiyo Rubber Co., Limited. Capital, $125,000. Purchased Hanhoku Rubber Co., Osaka, to manufacture rubber goods. Office, 1, Yurakucho, Kyobashi, Tokio.

HEVEA RUBBER IN FORMOSA.

Experience indicates that *Hevea* trees are more successfully grown in Formosa than *Manihot* trees. On the Murai plantation *Manihot* was first tried, and camphor trees were planted in alternation to provide a shield from the wind. Hurricanes are of annual occurrence, and despite the interplanting, the *Manihot* trees were greatly damaged. *Hevea* was then tried with better success, but they require seven years to attain the tapping age as against five years in Malaya.

FREIGHT ON RUBBER FROM JAVA TO AMERICAN PORTS.

A considerable decrease in freight rates from Batavia to San Francisco has recently taken place, said to be due to Japanese competition. A comparison of the figures shows the amount is almost 25 per cent.

	Rates.					
	San Francisco.			New York.		
	Unit.	Jan. 1, 1918.	Jan. 1, 1919.	Unit.	Jan. 1, 1918.	Jan. 1, 1919.
Rubber	40 cubic feet	$62.71	$36.18	Cubic meter[1]	$55.88	$55.88

[1]A cubic meter is 35.3 cubic feet.

Balata and Rubber Enterprises in the Guianas.

Special Correspondence.

A NEW BALATA ENTERPRISE.

SOME changes for the better have taken place in the balata industry in Surinam during the year. Several valuable concessions have exchanged hands and are now held by the Consolidated Rubber and Balata Estates, Limited, a British Guiana concern. The Consolidated is to operate this new enterprise on a gigantic scale; every available part of the acquired lands that has the "goods" will be exploited, the object being to take out the balata as soon as possible. In other words, the company intends to rush matters.

EXPANSE OF STILL WATER, UPPER MARONI.

This will mean thousands of dollars to the local trade; the laborers must be fed, and provisions purchased in the local market. When the men return to town and receive their wages it is all spent in the street, and the stores will derive all the benefit from this new source of revenue. It is said the purchase price paid to the sellers was $30,000 cash, and this amount is considered, by people who know, as being very reasonable. The concessions are situated in the Nickerie district of the colony and are well known to be rich in wood and easily reached from New Town, the starting point.

PRODUCTION IN 1918.

On the whole, 1918 was a prosperous year for the industry, and all the concerns operating made more or less satisfactory returns on the capital invested. The Balata Company Surinam, for instance, cleaned up a big crop which realized high prices. The firm of A. F. C. Curiel, operating with United States capital, did well; in fact, they all made money, while the smaller undertakings have also no cause to grumble.

The total production for 1918 was 663,930 kilograms of which were exported as follows: To United States, kilos, 26,891; Great Britain, 24,385; sold to the Consolidated in British Guiana, 573,746; total exported, 625,022.

Balata undertakings in Dutch Guiana have always proved veritable gold mines to those companies operating with experienced bleeders and with good administrative head men who study the conditions before starting in. A short sketch of what is most required to make the venture a success will, therefore, be interesting.

HOW CONCESSIONS ARE SUCCESSFULLY OPERATED.

The land which is granted by the Government must be paid for in advance. Charts are necessary to indicate the position of the land; these also must be paid for in advance. Then comes the prospecting party which consists, generally, of 20 men and a foreman, to each of whom is advanced a sum of money. Provisions and implements are purchased to feed and keep the men busy at prospecting for three months. Boats are either built or hired to convey the party to the fields. If the lands are situated on the Maroni, the transportation of men and provisions costs much higher than in any other district, owing to the rapid state of this river which entails hiring Indians or bush negroes to take the party over the falls. This means of transport generally costs $10 per man and the same sum for every hundred kilos of freight. Each boat can carry no more than five men and five hundred kilos of freight, which also includes the baggage of the laborer.

When the party reaches the spot where operations for prospecting are to take place, the men are sent out in every direction; lines or paths are cut through the forests by means of the cutlass and every tree encountered is marked and noted down so that the foreman at the end of the prospecting term can tell more or less the number of trees to each hectare of land. With this knowledge at its disposal the company, before exploiting or bleeding operations begin, will know exactly what the production will be at the end of a season, conditions, of course, being normal. In this way, therefore, it can be plainly seen that one can tell more or less what to expect from a concession of 40,000 hectares with, say, 20 trees to the hectare.

BALATA INVESTMENTS ARE SOUND.

Dutch Guiana balata investments are sound ones and many have reaped fortunes from this source. In the Nickerie district, for example, there are two full-blooded negroes who, ten years ago, were ordinary bleeders. To-day they are well-to-do men, being worth, individually, about $200,000 cash, owning landed property valued at $150,000. These two men are the exception, for the general run of the balata men are "wasters" and drunkards, with never a cent to show after being a week in town.

According to the new balata laws, which came into force not very long ago, only men with some capital will be granted lands by the Government, for the reason that the responsibility is great. For instance, in the case of a company operating a concession with, say, 500 laborers, the Government must be satisfied that after the contract time of these men has expired, their wages will be paid in full the day after their arrival in the city from the concession. In the past, several poor men were made victims by dishonest and unprincipled employers; all this, however, is past and the new laws protect both employer and employe.

THE INDUSTRY IN FRENCH GUIANA.

In French Guiana the industry is prospering. A syndicate at the head of which is M. Galmot, well known in United States society and a popular Paris journalist, is doing wonders on the Maroni. This concern has employed an able balata foreman, John Moses, for years in the employ of the Balata Company Surinam, where he made good. Mr. Moses is placed in charge of the syndicate's affairs and has men and means at his disposal to run the enterprise according to his own judgment. Several hundred bleeders are scattered all over the different concessions on the Maroni and its tributaries and have, up to the date of writing, made ample use of their time by producing a tremendous quantity of gum which, when prepared for market, will amount to several hundred thousand kilograms. French Guiana will, in a comparatively short time, become a rival to both

British and Dutch Guiana. The forests are practically virgin and the fields of operation extensive.

THRIVING HEVEA PLANTATIONS.

Cultivated *Hevea brasiliensis* in Dutch Guiana compares favorably with rubber estates in the East, says a Dutch official who arrived recently from Java and was impressed with the robust and healthy condition of the trees in this country. Hardly any tapping operations have taken place during the last three years owing to the war and the restrictions on the export of rubber. In June last year, however, one estate, as an experiment, put on a gang of Javanese bleeders for a few months, and the results were so satisfactory that the owners have now decided to tap the trees regularly in future. This experimental tapping produced 1,718 kilograms of biscuit of the finest quality.

It is expected that all the rubber-producing plantations will begin operations this year, and if weather conditions are satisfactory the production will startle the rubber producers of the East. It must not be forgotten that only yesterday the colony began to talk rubber and is therefore young in the business in comparison with other countries. The colony is to be congratulated on its soil and climate; they are ideal for the industry and if the price of rubber remains stable there will still be good money to be made by rubber planters in this part of the world.

There are fully a million trees of tappable size in Surinam that have never been touched by the knife; they are just "fat" with latex, and are fine specimens of *Hevea brasiliensis*. It is a pleasure to visit some of the estates and see these valuable productions of nature. A fact which should be recorded is that for the last eighteen months the leaf disease has not been seen in the country; it is entirely eradicated and it is anticipated that, through measures adopted by the Agricultural Department, the disease will never make its appearance again.

In conclusion, Dutch Guiana would make an ideal spot for Americans, it is so well situated; the climate is charming, the resources so numerous, the chances for money-making so certain, that it would be a pity to allow such a country to go to ruin when the United States has the millions to make it one

TRAIL THROUGH THE BUSH TO BALATA CONCESSION.

of the most prosperous countries in South America. Why doesn't Uncle Sam make a bid for it? Holland undoubtedly realizes the desirability of a transfer to the United States of her West Indian possessions at this time, especially when she contemplates the expense she is called upon to meet each year for their up-keep. To quote the words of Dr. Schick in "Onz Land":

"America can better develop the resources of the West Indies than the Netherlands, and when people begin to talk of how many millions they will ask, they are on their way to acceptance of the proposition."

MISCELLANEOUS FOREIGN NOTES.

BALATA AND RUBBER EXPORTS FROM BRITISH GUIANA.

THE amount of balata and rubber exported from British Guiana to England and the United States during the ten months ended October 31, 1918, as compared with the corresponding ten months of 1917, is as follows:

		1917.	1918.
Balata	*pounds*	1,015,174	575,681
Rubber		12,113	19,173

The production of balata decreased because the dry season set in earlier than usual, stopping the flow of latex. At the same time, the stocks on hand at the end of October were not above normal for that season of the year.

RUBBER IN DUTCH GUIANA.

Rubber production in Dutch Guiana decreased about 50 per cent in 1917, owing to plant diseases and lack of the right kind of labor, but ruling prices were high. In 1916, 23,861 pounds were sold for $23,861; in 1917, 9,354 pounds produced $5,102.

Balata production increased 261,201 pounds in 1917, 1,952,643 pounds being produced as against 1,692,442 in 1916. Prices varied during the year, changing on the London market from 70 to 95 cents per kilo and in New York from 72 to 95 cents.

RUBBER MANUFACTURES IN PERU.

Imports of rubber manufactures increased notably during 1917, notwithstanding the difficulties of shipment. The amount imported in 1917 was valued at $1,002,288. In 1916 the imports amounted to $107,817.

Export figures, however, show a decrease of approximately 25 per cent, doubtlessly due to inadequate shipping facilities. Crude rubber exports during 1917 were valued at $2,812,640, as against $3,391,459 in 1917.

BRITISH SOUTH AFRICAN IMPORTS AND EXPORTS, 1916-1917.

Statistics covering the imports and exports of British South Africa show the following comparison:

IMPORTS.

	1916.	1917.
India rubber, including tires	$2,531,286	$2,805,099
Machinery bands and belting	864,155	888,696
Conveying hose	401,311	288,122
Totals	$3,796,752	$3,981,917

EXPORTS.

Rubber goods and gutta percha:	
To United Kingdom	$1,565,553
United States	738,944
Italy	281,683
Total	$2,586,180

Since the entry of the United States into the war, no discrimination has been made against American goods, although there is naturally some preference for products of British manufacture in some quarters. Most important importers, however, handle American products. Rubber tires are also imported from Japan.

RUBBER EXPORTERS IN BATAVIA.

The Bureau of Foreign and Domestic Commerce can supply a list of exporters of rubber at Batavia if reference is made to file number 9546.

RUBBER IMPORTED INTO AUSTRALIA AND SOUTH AUSTRALIA.

Import figures for Australia and South Australia show that Australia imported rubber goods during the year 1917-1918 amounting to $5,370,085, a slight gain over the figures for 1916-1917, $5,274,921. During the year 1916-1917, South Australia imported rubber and rubber goods to the value of $286,413.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED MARCH 18, 1919.

NO. 1,297,316. Demountable rim for tires. J. A. Borland, St. Paul, Minn.

1,297,338. Demountable rim for tires. G. B. Filmer, Moose Jaw, Saskatchewan, Canada.

1,297,406. Armored inner tube. H. H. Schuster, Chicago, Ill.

1,297,602. Fountain pen. J. F. Siegienski, Thorp, Wis.

1,297,648. Swimming device. R. N. Bressler, New York City.

1,297,694. Squilgee roller. L. Kindling, Milwaukee, Wis.

1,297,725. Quick detachable dust-cap for tire valves. M. F. Patton, Tuscaloosa, Ala., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

1,297,824. Cap for valves. H. Fuchs, St. Louis, Mo.

1,297,834. Composition rubber sole for boots and shoes. J. E. Grosjean, Lima, assignor by direct and mesne assignments of ¼ to L. F. Montgomery, Fort Recovery, and ¼ to F. L. Maire, Lima—all in Ohio.

1,297,902. Resilient tire. N. C. Pellissero, Scammon, assignor of ⅓ to A. Luckey, Columbus—both in Kansas.

1,297,922. Arch support for shoes. C. L. Skinner and P. A. Tucker, Chicago, Ill.

ISSUED MARCH 25, 1919.

1,298,050. Demountable rim for tires. O. J. Jobski, assignor to The Standard Parts Co.—both of Cleveland, O.

1,298,089. Overshoe with rubber sole, etc. M. L. Paterson, Wilmette, Ill., assignor to Converse Rubber Shoe Co., Malden, Mass.

1,298,104. Rubber-heel lift with sockets for inserting means of attaching to shoes. G. Schrade, New York City.

1,298,117. Metallic packing containing cubical particles of rubber composition. J. G. Strock, Pittsburgh, Pa. (Original application divided.)

1,298,139. Double suction cup. C. M. Wolcott, New York City, assignor of ¾ to S. and I. Myerberg, Baltimore, Md.

1,298,213. Tire casing. G. E. Hottenstein, Miami, Ariz.

1,298,326. Fountain pen having two ink reservoirs, points, etc. E. Gessmann, Union Hill, N. J.

1,298,335. Brake lining. C. H. Gunn, Sacramento, Calif.

1,298,404. Gas-mask respirator. H. Romanoff, New York City.

1,298,423. Gaiter-drying device with elastic strap. E. M. Trinks, Pittsburgh, Pa.

1,298,551. Rubber-shoe sole with tread and shank portions. F. A. Nolan, St. Paul, Minn.

1,298,581 Reliner for pneumatic tires. H. W. Shaar, Monroe, Wash.

ISSUED APRIL 1, 1919.

1,298,633. Combination shaving set having brush embedded in hard rubber. S. Alland, Boston, Mass.

1,298,639. Eraser with brush attachment. J. Auld, Chicago, Ill.

1,298,660. Resilient wheel. A. Cardoso, Milan, Italy.

1,298,661. Tire casing and method of manufacture. A. L. Case, Plainfield, N. J.

1,298,670. Chewing gum containing caffein to produce bracing effect of coffee. S. W. Cramer, Charlotte, N. C.

1,298,673. Dental plate having suction-cup attachment. C. De-Felice, New York City.

1,298,713. Crutch having pneumatic cushion between tip and foot. G. Hipwood, Boston, Mass.

1,298,915. Armored pneumatic tire. A. Cruzan, Lawrence, Kans.

1,298,945. Inner tube for tires. H. M. Henning, Hinkley, Calif.

1,299,005. Tire shoe for pneumatic tires. H. E. Motl, Houston, Tex.

1,299,037. Resilient heel with pneumatic cushion. A. L. Runyan, Omaha, Neb.

1,299,075. Gas mask. P. Wasylowich, Chelsea, Mass.

1,299,092. Rubber hand-ball having 14 faces to cause rebound in unexpected direction. J. Abrahamson, Asbury Park, N. J.

1,299,112. Tread for pneumatic tires. T. Bradshaw, Oakland, Calif.

1,299,167. Pneumatic tire having cord element between casing and air tube. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York City.

1,299,253. Screw-clamp for tires. J. A. and E. E. Sowell, Sacramento, Calif.

1,299,305. Tire casing with side flaps and tread member laced together. W. G. Deane, Niagara Falls, N. Y.

1,299,352. Demountable wheel rim for tires. L. F. Jordan, Portland, Me.

ISSUED APRIL 8, 1919.

1,299,450. Demountable rim for tires. H. J. Foster, assignor to Hydraulic Pressed Steel Co.—both of Cleveland, O.

1,299,451. Demountable rim for tires. H. J. Foster, assignor to Hydraulic Pressed Steel Co.—both of Cleveland, O.

1,299,472. Demountable rim for tires. E. C. Horni, Dayton, O.

1,299,541. Demountable clutch-rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.

1,299,576. Stylographic pen. G. N. Hosinger, Jersey City, N. J.

1,299,642. Fountain pen. W. A. Welty and H. P. Ravn, Waterloo, Ia.

1,299,650. Sole and heel for shoes, composed of wood blocks and fibrous material embedded in a rubber matrix.

1,299,722. Cushion wheel. M. I. Haulter, Shippensburg, Pa.

1,299,836. Fountain pen. B. R. Jolly, Raleigh, N. C.

1,299,903. Demountable-rim-securing device for tires. W. N. Booth, assignor to Kelsey Wheel Co., Inc.—both of Detroit, Mich.

1,299,943. Divisible wheel rim for pneumatic tires. T. J. Hobson, Birmingham, England.

1,300,050. Pneumatic tire. N. L. Tobin, Chicago, Ill.

1,300,052. Demountable collapsible rim for tires. C. A. Tripp, Mojave, Calif.

1,300,063. Puncture-proof tire. J. S. Walton, Burley, Idaho.

1,300,070. Rubber heel. F. Wharton, Elyria, O.

1,300,071. Rubber heel. F. Wharton, Elyria, O.

1,300,072. Rubber lift and plate for attachment to French heels. F. Wharton, Elyria, O.

1,300,198. Elastic arm-band with clasp. T. A. Schaffer, assignor to Interstate Elastic Braid Co.—both of Brooklyn, N. Y.

1,300,212. Brassière with fronts impervious to moisture, for nursing mothers. I. C. Epp, San Francisco, Calif.

1,300,223. Demountable rim for tires. C. W. Pride, Canton, assignor to himself and J. J. David—both in Cardiff, England.

1,300,224. Rubber gasket for hermetically sealing receptacle closures. S. H. Rood, Hartford, Conn.

ISSUED APRIL 15, 1919.

1,300,379. Fountain pen. S. Greenfield, New York City.

1,300,514. Demountable-rim lock. E. Teiber, St. Louis, Mo.

1,300,538. Overshoe and clamp for pneumatic tire. J. A. Williams, Bisbee, Ariz.

1,300,601. Cover for tires. J. H. Gill, J. D. Rea, and L. Sanderson—all of Dunedin, N. Z.

1,300,640. Toy balloon, consisting of several bags or sacks, one within the other, the innermost being capable of greater expansion than the outermost and the latter being frangible. J. Pasternak, New York City.

1,300,696. Reinforcing fabric strip for tires. T. Branson, assignor to Sibson & Stern, Inc., Germantown—both of Philadelphia, Pa.

1,300,731. Pneumatic tire shoe. H. Kaplan, New York City.

1,300,732. Vehicle tire with inner ribs formed integrally with casing. G. L. Kavanagh, Montreal, Que., Canada.

1,300,849. Fountain pen. D. J. La France and W. P. De Witt, Somerville, assignors to De Witt La France Co., Cambridge, a partnership composed of the assignors—both in Mass.

1,300,877. Waist-band with elastic gathering means. S. Replansky, New York City.

1,300,980. Interliner for pneumatic tires. G. A. Le Doux, San Francisco, Calif.

1,301,057. Fountain pen. C. R. Keeran, assignor to Keeran Products Co.—both of Chicago, Ill.

THE DOMINION OF CANADA.

ISSUED APRIL 15, 1919.

189,645. Waterproof sole for shoes. J. V. Mattos, Taunton, Mass., U. S. A.

ISSUED APRIL 22, 1919.

189,771. Garment supporter. E. C. Jones, Toronto, Ont.

189,869. Rubber comforter for babies. J. G. Franklin & Sons, Limited, assignee of A. Shephard—both of London, England.

189,870 Cushion tire. The Goodyear Tire & Rubber Co., assignee of J. E. Hale—both of Akron, O., U. S. A.

189,871. Rubber mat provided with recesses in the under surface to receive projections on surface to which applied. Gutta Percha & Rubber, Limited, assignee of C. H. Temple and J. H. S. Kerr—all of Toronto, Ont.

189,876. Cushion tire. Morand Bros.-Martin Cushion Wheel Co., assignee of W. C. Martin—both of Chicago, Ill., U. S. A.

189,886. Pneumatic tire. The Sterns Tire & Tube Co., assignee of E. Sterns—both of St. Louis, Mo., U. S. A.

189,887. Pneumatic tube for tires. The Sterns Tire & Tube Co., assignee of E. Sterns—both of St. Louis, Mo., U. S. A.

189,901. Detachable half-shoe for tires. H. M. Benson, Los Angeles, Calif., and L. G. Fixen, assignee of ½ interest, Chicago, Ill.—both in U. S. A.

ISSUED APRIL 29, 1919.

189,942. Rubber tube connection with larger curved side thicker than the other to withstand greater pressure. J. A. Desmarteau, Roxton Falls, Que.

189,955. Armored pneumatic tire. B. Granville, New York City, U. S. A.

189,970. Puncture-proof tire. J. H. Kassmann, St. Louis, Mo., U. S. A.

189,973. Automobile tire with metallic plates embedded in the casing to absorb heat, etc. I. Leo, Chicago, Ill., U. S. A.

189,978. Non-skid tire. A. S. Mauk, Orangeville, Md., U. S. A.

189,983. Pneumatic tire. E. J. Morrow, Detroit, Mich., U. S. A.

189,988. Nasal douche. H. B. Nichols, New York City, U. S. A.

190,006. Inner tube for pneumatic tires. B. C. Seaton, Nashville, Tenn., U. S. A.

190,008. Cushion tire. D. H. Shapiro, Montreal, Que.

Chemical Patents will be found on page 467. Machinery Patents on pages 489, 490.

190,032. Pneumatic tire. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of G. F. Fisher, Roselle, N. J., U. S. A.

190,066. Armored pneumatic tire. C. W. Bain and R. I. Brown, assignee of ½ interest—both of High Point, N. C., U. S. A.

ISSUED MAY 6, 1919.

190,094. Pneumatic pad for arch supports. T. Coffey, Tulsa, Okla., U. S. A.

190,115. Toy ball having a whistle and rattle, the representation of a face on its surface, and elastic semi-spherical covers, each having a portion at its center vulcanized. C. O. Griffin, Newbern, N. C., U. S. A.

190,127. Tire valve. W. C. Huntoon, Providence, R. I., U. S. A.

190,134. Pneumatic insole for shoes. M. Korbel, South Bethlehem, Pa., U. S. A.

190,161. Syringe. J. P. Richards, Toronto, Ont.

190,191. Inner tube for tires. The Brown Perfection Tube Co., New York City, assignee of J. J. Voorhees, Jersey City, N. J.—both in U. S. A.

190,192. Battery jar of vulcanized rubber. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of H. Weida, Highland Park, N. J., U. S. A.

190,205. Dust cap for valves. A. Schrader's Son, Inc., New York City, assignee of W. B. Burke, Cleveland, O.—both in U. S. A.

190,215. Spring wheel with solid rubber tire. E. E. McNeely and H. Gordon, assignee of ½ interest—both of Waldron, Ind. U. S. A.

190,222. Artificial foot with rubber cushioning pads. C. B. Winn, Buffalo, N. Y., U. S. A.

ISSUED MAY 13, 1919.

190,231. Tire valve. M. C. Schweinert, West Hoboken, and H. P. Kraft, Ridgewood, both in New Jersey, U. S. A.

190,258. Tire filler composed of small particles or rubber, cement, gasoline, and kerosene, molded and subjected to pressure. E. F. Aycock, Midlothian, Tex., U. S. A.

190,288. Tire rim. S. P. Michael, Frankfort, Ind., U. S. A.

190,333. Pneumatic tire. O. Zancan, New York City, U. S. A.

THE UNITED KINGDOM.

ISSUED APRIL 2, 1919.

122,694. Collapsible crutch with rubber ferrule. R. T. Kelly, The Nook, Walton Park, Liverpool.

122,777. Drinking cup for vacuum flasks, with rubber band. F. Price, Moate Road, Athlone, Ireland.

122,806. Mattress with inflatable sections. F. W. Brampton, Steel Stampings, Limited, Cookley, near Kidderminster, Worcestershire.

122,904. Solid rubber tire with side recesses. Dunlop Rubber Co., 14 Regent street, Westminster, and C. Macbeth, Dunlop Rubber Co., Para Mills, Aston, Birmingham.

ISSUED APRIL 9, 1919.

123,011. Knife for tapping rubber trees. T. W. Newey, 9 St. Mary's Row, Birmingham.

123,142. Resilient wheel. A. W. Benjamin, Yarker, Ont., Canada.

123,143. Multi-core electric cable. A. V. Downton, Lesney View, Erith, Kent.

ISSUED APRIL 16, 1919.

123,166. Sock having layer of paper, powdered cork, sawdust, etc., covered with layers of waterproofed fabric whose rubberized surface is inside or outside, according to whether the socks are to be worn by persons with cold or hot feet. S. Abraham, 16 Marshall Place, Cheetham Hill, Manchester.

123,174. Pneumatic or inflated disk-wheels with or without streamline shield, for deadening shock of airplane landing. Dunlop Rubber Co. and W. H. Paull, Para Mills, Aston Cross, Birmingham.

123,221. Protector for soothing teats or nipples for nursing bottles. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

123,239. Elastic tab-ends for suspenders. C. G. Hall, 13 Fosters Gardens, Haslemere, Surrey.

123,284. Rubber blocks for wheel tires. E. W. Edwards, Akron, O., U. S. A.

123,291. Detachable rim or double rim for tires. T. J. Hobson, 17 Chain Walk, Aston, Birmingham.

123,358. Rubber pads with removable metal studs, for adapting tractor wheels for use on hard roads or soft land. W. L. Bodman, Lydiate Ash, Bromsgrove, Worcestershire.

123,382. Life-saving garment with inflatable pouch. J. S. Drew, 49th Australian Camp, Stockbridge, Hampshire.

ISSUED APRIL 24, 1919.

123,487. Protector for boots and shoes, consisting of a revoluble rubber pad backed with canvas and having an embedded plate for the securing screw. C. N. Chamberlain, Chowpati, Bombay, India.

ISSUED APRIL 30, 1919.

123,608. Rubber-coated vulcanized fiber sheets for use instead of metal plates for roofing, paneling, etc., or for the construction of vessels or utensils ordinarily made of tin. A. D. Spicer and J. Spicer & Sons, 50 Upper Thames street, London.

123,745. Breast pump. O. O. R. Schwidetzky, 157 Terrace avenue, Hasbrouck Heights, N. J., U. S. A. (Not yet accepted.)

123,789. Foundation band for solid rubber tire, having inner edge formed with grooves to reduce the weight. Dunlop Rubber Co., 14 Regent street, Westminster, and H. C. Young, The Grove, Chester Road, Erdington, Birmingham.

TRADE MARKS.

THE UNITED STATES.

NO. 108,818. The word BELDAMITE—machinery composition packing. The Beldam Packing & Rubber Co., Limited, London, England.

109,398. The words TRI-FONT above the representation of a nipple within a circle—nursing nipples. Harris & Berntz Co., Philadelphia, Pa.

111,651. The words KELLY SPRINGFIELD in fancy lettering to fill the space within the inner of two circles—rubber and fabric pneumatic tires. Kelly-Springfield Tire Co., New York City.

114,656. The word SUBERSOL—composition soles for boots and shoes. The Armstrong Cork Co., Pittsburgh, Pa.

115,043. The words BLANTON'S BEAR-CAT over the representation of a bear-cat crawling through a tire, all within a modified square—patches for pneumatic tires. John R. Blanton, Oklahoma, Okla.

115,157. Representation of three tires eccentrically interlinked, bearing the words THE PARA COMPANY, TIRES, TRENTON, N. J.—rubber tires and tubes. The Para Co., Trenton, N. J.

115,360. The words AIR WEIGHT—dress shields. Samstag & Hilder Bros., New York City.

115,477. The word RUBLATA—rubber belting. Boston Woven Hose & Rubber Co., Cambridge, Mass.

115,554. The word HORSESHOE—rubber heels or lifts for footwear. Racine Auto Tire Co., Racine, Wis.

115,739. The words IT'S-IT—patch kits, including cement and rubber patches for repairing tires and tubes. Schisler Brothers, St. Louis, Mo.

115,830. Representation of a tire within which a bear-cat is crouching, and the words BEAR CAT—rubber-backed patch for punctures and blow-outs in pneumatic tires and for patching other rubber articles. Blanton Rubber and Manufacturing Co., Oklahoma, Okla.

THE DOMINION OF CANADA.

24,351. The word TROJAN enclosed in horizontal and vertical lines—automobile tubes. Samuel A. Richardson, Montreal, Que.

24,363. The word CLIPPER—pneumatic tires and tubes for automobiles and bicycles. Dunlop Tire and Rubber Goods Co., Limited, Toronto, Ont.

NEW ZEALAND.

14,810. Representation of a ball—waterproof clothing. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind., U. S. A.

14,812. The words BALL-BAND arranged in a half-circle—waterproof clothing. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind., U. S. A.

DESIGNS.

THE UNITED STATES.

NO. 53,100. Tire. Patented March 18, 1919. Term 7 years. A. E. Braden, Tacoma, Wash.

53,108. Tire. Patented March 25, 1919. Term 14 years. H. C. Arnold, Brookline, assignor to Converse Rubber Shoe Co., Malden—both in Mass.

53,111. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.

53,112. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.

53,113. Pneumatic tires. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.

53,114. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.

53,100. 53,108. 53,111. 53,112. 53,113. 53,114. 53,116.

53,129. 53,133. 53,143. 53,146. 53,151. 53,190.

53,116. Tire. Patented March 25, 1919. Term 14 years. A. R. Colvin, assignor to The Combination Rubber Manufacturing Co.—both of Bloomfield, N. J.

53,129. Tire. Patented March 25, 1919. Term 14 years. L. J. Kelly, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.

53,133. Tire. Patented March 25, 1919. Term 7 years. C. W. McKone, assignor to The Gordon Tire & Rubber Co.—both of Canton, O.

53,143. Pneumatic tire. Patented March 25, 1919. Term 14 years. M. L. Wiener, Akron, assignor to The Oldfield Tire Co., Cleveland—both in Ohio.

53,146. Non-skid tire. Patented April 1, 1919. Term 14 years. E. N. Downes, assignor to J. & D. Tire Co.—both of Charlotte, N. C.

53,151. Tire casing. Patented April 1, 1919. Term 14 years. C. P. L. Huston, Plainfield, N. J.

53,190. Tire. Patented April 8, 1919. Term 7 years. R. S. Wicks, assignor to Wicks' Tire & Rubber Products Co.—both of Seattle, Wash.

THE DOMINION OF CANADA.

4,541. Waterproof coat with leggings. Patented March 29, 1919. B. W. Hartley, Halleybury, Ont.

4,548. Pneumatic tire. Patented March 31, 1919. Dunlop Tire and Rubber Goods Co., Limited, Toronto, Ont.

4,549. Garter. Patented March 31, 1919. William P. Barrett, St. Mary's, Ont.

4,553. Pneumatic tire. Patented March 31, 1919. Bernard W. Hartley, Haileybury, Ont.

4,570. Tire tread. Patented April 2, 1919. The Canadian Fairbanks-Morse Co., Limited, Montreal, Que.

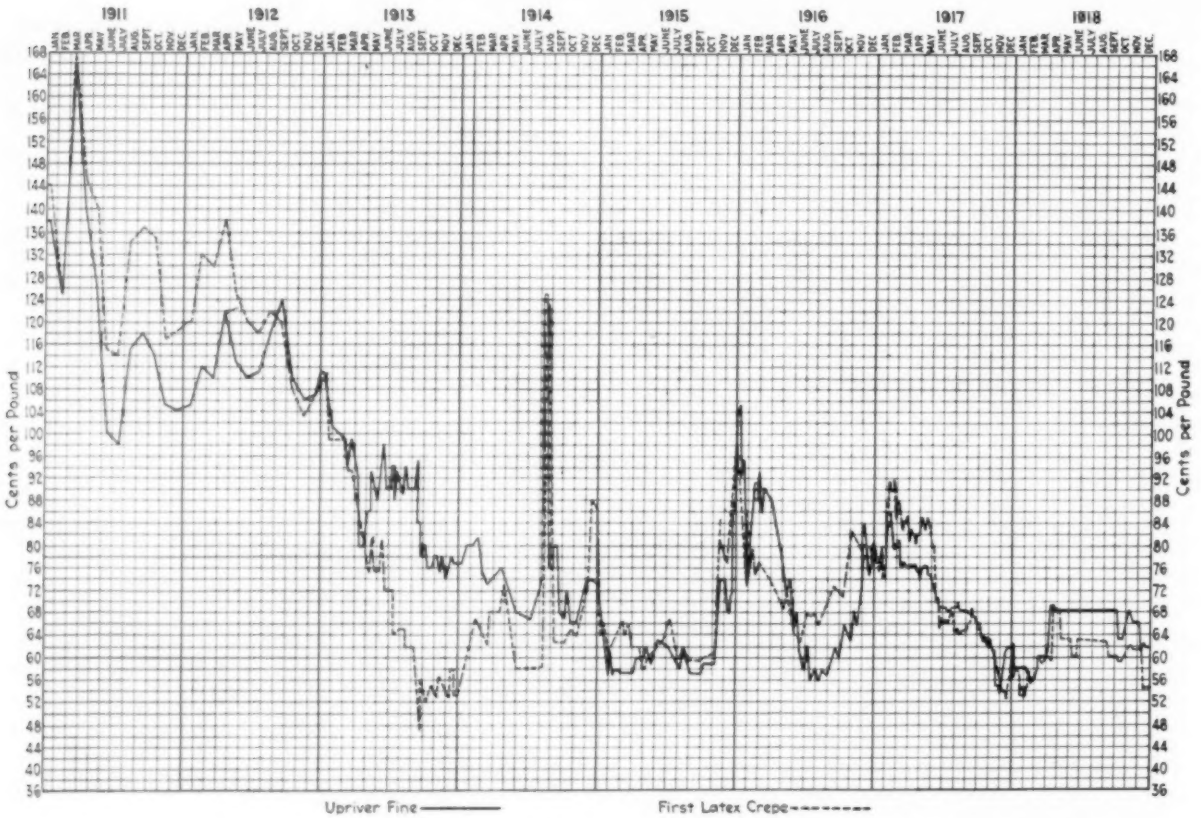


CHART SHOWING FLUCTUATIONS OF THE NEW YORK CRUDE RUBBER SPOT MARKET FOR THE YEARS 1914 TO 1918, INCLUSIVE.

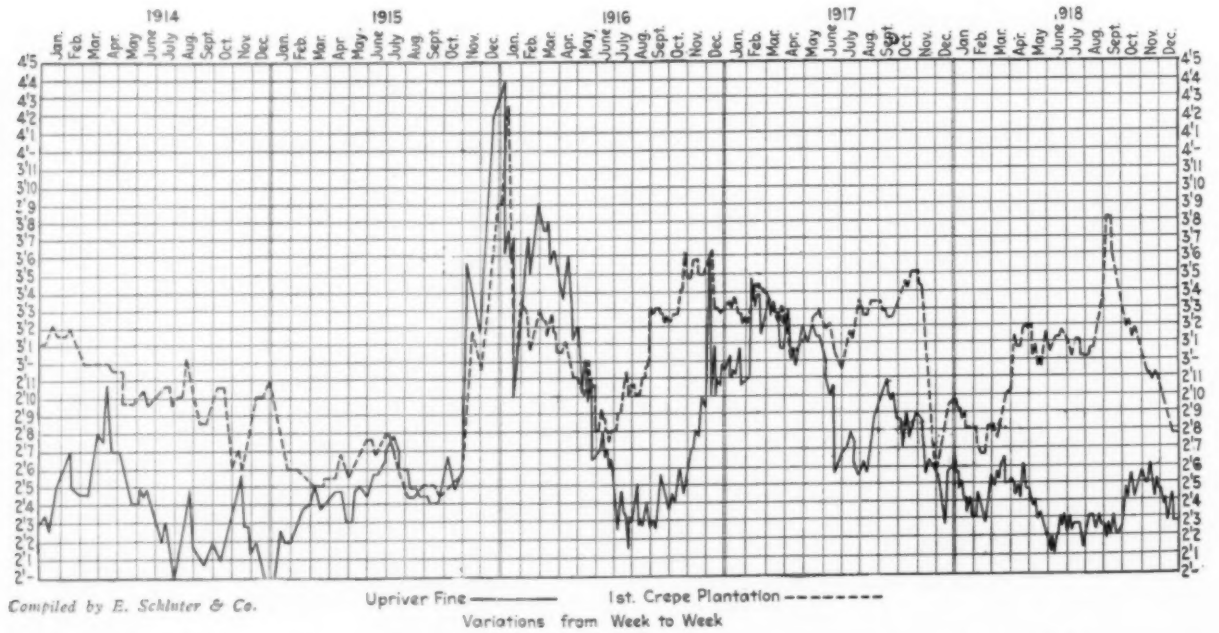


CHART SHOWING FLUCTUATIONS OF THE LONDON CRUDE RUBBER MARKET FOR THE YEARS 1911 TO 1918, INCLUSIVE.

Review of the Crude Rubber Market.

NEW YORK.

DURING the past month the prevailing tone in the crude rubber market has been one of dullness, the price for plantations has been remarkably steady. Early in the month the spot plantations were depressed owing to oversupply. The prices were firm, however, due to advices from London and the Far East where the markets were higher.

About the middle of the month there was a decline of about one cent per pound on first latex, followed by a tendency to advance, owing to a demand for future deliveries.

The month closed dull with quotations nominal.

PLANTATIONS. May 3, first latex crêpe, spot 47 cents; May arrivals, 48 cents; July to September arrivals, 48 cents; July to December arrivals, 48 cents; January to December, 1920, 51 cents. On May 23 the prices were: first latex crêpe, spot, 46½ cents; July to September arrivals, 47 cents; July to December arrivals, 47½-48 cents. January to December, 1920, 49 cents.

May 3, spot ribs, 46 cents; May arrivals, 46 cents; July to September arrivals, 47 cents; July to December arrivals, 47 cents; January to December, 1920, 50 cents. On May 23, spot ribs were 45½ cents; July-September, 47 cents; July-December, 46½@47 cents, and 1920 futures, 50 cents.

May 3, Amber gristly crêpe was quoted at 41 to 44 cents for near-by and 43 cents for July to December arrivals. On May 23 this grade was quoted, spot 41-44 cents; July to December arrivals 44 cents; 1920 futures 44 cents.

May 3, No. 1 roll brown crêpe, spot, 34 cents; nearby, 31 cents; July to December arrivals, 30 cents; May 23, No. 1 roll brown crêpe, spot, was 32-34 cents; July to December arrivals, 32 cents.

PARÀS. Spot prices on May 3 were: Upriver fine, 56½ cents; islands fine, 47 cents; upriver coarse, 35 cents; islands coarse, 21 cents; Cametá coarse, 23 cents; May 23, spot prices were: Upriver fine, 56 cents; upriver coarse, 34 cents; islands fine, 47 cents; islands coarse, 34 cents; Cametá coarse, 22½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on May 24, the current date:

	June 1, 1918.	May 1, 1919.	May 24, 1919.
PLANTATION HEVEA—			
First latex crêpe / *Hevea first crêpe	63 @	48½@	46 @47
Amber crêpe No. 1	60 @	46 @	44 @
Amber crêpe No. 2	60 @	45 @	43 @
Amber crêpe No. 3	58 @	44 @	42 @
Amber crêpe No. 4	57 @	43 @	41 @
Brown crêpe, thick clean	60 @	43 @	41 @
Brown crêpe, thin clean	60 @	43 @	41 @
Brown crêpe, thin specky	50 @	41 @	@
Brown crêpe, rolled	44 @	34 @	32 @
Smoked sheet, ribbed standard quality / *Hevea ribbed smoked sheets	62 @	47½@	45 @46
Smoked sheets, plain standard quality / *Hevea plain or smooth smoked sheets	60 @	46 @	43 @44
Unsmoked sheet, standard quality / *Hevea unsmoked sheets	61 @	44 @	42 @43
Colombo scrap No. 1	46 @	33 @	32 @
Colombo scrap No. 2	44 @	30 @	29 @30
BRAZILIAN PARAS—			
Upriver fine	68 @	56½@	56½@
Upriver medium	63 @	**51 @	52 @
Upriver coarse	40 @	34½@	34 @
Upriver weak fine	56 @	43 @	44 @
Upper caucho ball	40 @	36 @37½	34½@35
Islands, fine	59 @	**48 @	47 @
Islands medium	@	**43 @	43 @
Islands, coarse	27 @	**22 @	21 @
Cametá, coarse	28 @	**23 @	22 @22½
Lower caucho ball	36 @	31 @	31 @
Peruvian fine	@	53 @	53½@
Tapajos fine	@	53 @	53½@
AFRICANS—			
Niger flake, prime	28 @	22 @	23 @
Benguela, extra No. 1, 28%	33 @	@	32 @
Benguela No. 2, 32½%	29 @	@	30 @
Congo prime, black upper	50 @	42 @	**42 @
Congo prime, red upper	48 @	40 @	**40 @
Rio Nunez ball	55 @	50 @	**50 @
Rio Nunez sheets and strings	@	50 @	**50 @
Conakry niggers	@	50 @	**50 @
Massai sheets and strings	55 @	50 @	**50 @
CENTRALS—			
Corinto scrap	@	33 @	32 @
Esmeralda sausage	39 @	33 @	32 @
Central scrap	39 @	32½@	31 @
Central scrap and strip, 75%	@	32 @	29 @
Central wet sheet, 25%	@	22 @	23 @
Guayule, 20% guarantee	35 @	30 @	28 @
Guayule, dry	48 @	40 @	40 @
MANICOBAS—			
Ceara negro heads	40 @	36 @	36 @
Ceara scrap	34 @	26 @	32 @
Maniçoba (basis 30% loss washing and drying)	38 @	34 @	34 @
Mangabeira thin sheet	40 @	36 @	38 @
EAST INDIAN—			
Assam crêpe	**56 @	@	@
Assam onions	**44 @	@	@
Penang block scrap	**37 @	39 @	39 @
BALATA—			
Block, Ciudad Bolivar	69 @	76½@	80 @85
Colombia	60 @	@	60 @62
Panama	59 @	46 @47	40 @45
Surinam sheet	**93 @	97 @99	1.00 @
amber	94 @	@	1.03 @
PONTIANAK—			
Banjermassin	**14¼ @15	14 @17	14 @15
Pressed block	**23 @	23½@25	16 @17
Sarawak	@	14¼@	12 @14
GUTTA PERCHA—			
Gutta Siak	**24 @	26 @	24 @
Red Macassar	**2.00 @3.00	3.20 @	3.15 @

*Rubber Association of America nomenclature.
**Nominal.

RECLAIMED RUBBER.

The market for reclaimed rubbers of every grade has remained dull for the past two months. Consumers continue to purchase only for immediate needs and special requirements.

Present prices at which scrap rubber is held by dealers practically forbid its conversion by reclaimers into products that can compete with crude rubber. Thus a situation is created disadvantageous to the trade on all sides which ultimately probably will be relieved by mutual concessions.

NEW YORK QUOTATIONS.

MAY 24, 1919.

Subject to change without notice.

Standard reclaims:		
Floating	lb.	.35 @ .40
Friction	lb.	.35 @ .40
Mechanical	lb.	.12 @ .13
Red	lb.	.20 @ .25
Shoe	lb.	.14¼ @ .15¼
Tire, auto	lb.	.17¼ @ .17¾
truck	lb.	.12¾ @ .13¼
White	lb.	.24 @ .25

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	May. 1919.[1]	1918.	1917.
PLANTATIONS—			
First latex crêpe	$0.48 @ $0.46	$0.67½ @ $0.63	$0.79 @ $0.75
Smoked sheet ribbed	.47 @ .45	.67½ @ .62	.79 @ .75
PARAS—			
Upriver fine	.58 @ .56	.68 @ .68	.74½ @ .73
Upriver coarse	.35 @ .34	.42 @ .38	.53½ @ .51
Islands fine	.47½ @ .47	.59 @ .55½	.73½ @ .73½
Islands coarse	.21½ @ .21½	.28 @ .27	.34½ @ .33½
Cametá	.23 @ .21½	.28 @ .28	.37 @ .36½

[1]Figured only to May 21.

THE MARKET FOR COMMERCIAL PAPER.

During the first half of May the demand for paper was light, but improved the latter part of the month, especially with out-of-town banks, the best rubber names going at 5½ per cent to 5¾ per cent, and those not so well known at 6 per cent.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF MARCH, 1919.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Totals.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Totals.	Grand Totals.
Tancredo, Porto & Co.....*kilos*	91,346	21,090	69,321	110,243	292,000	52,000	.....	.....	.....	52,000	344,000
Stowell & Co.....	31,280	3,308	30,936	38,537	104,061	100,067	11,290	5,074	103,569	220,000	324,061
T. A. Mendes & Co.....	.....	8,840	29,190	2,080	40,110	205,870	.....	.....	.....	205,870	245,980
I. G. Araujo.....	.....	.....	.....	.....	.....	130,813	6,962	3,664	879	142,318	142,318
General Rubber Co. of Brazil....	.....	.....	40,000	.....	40,000	35,637	1,174	328	28,861	66,000	106,000
Adelbert H Alden, Limited.....	.....	5,440	.....	.....	5,440	50,116	.....	.....	.....	50,116	55,556
I. Essabbá	42,099	6,241	1,660	.....	50,000	.....	.....	.....	.....	.....	50,000
Higson & Fall.....	.....	.....	.....	.....	.....	30,080	1,218	572	.....	31,870	31,870
	164,725	44,919	171,107	150,860	531,611	604,583	20,644	9,638	133,309	768,174	1,299,785
In transit, Iquitos.....	16,306	31,304	15,647	17,870	81,127	18,082	3,518	4,142	45,176	70,918	152,045
Totals	181,031	76,223	186,754	168,730	612,738	622,665	24,162	13,780	178,485	839,092	1,451,830

(Compiled by Stowell & Co., Manaos, Brazil.)

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.

	January 1 to March 24. 1918.	1919.
Crude rubber:		
From Straits Settlements..*lbs.*	1,061,878	474,809
India	538,021	399,936
Burma and other countries	3,107	.....
Totals	1,603,606	874,745

[1]These figures include cargoes for transshipment to New Zealand, other ports of Australia, and dependencies.

(Compiled by the Ceylon Chamber of Commerce.)

EXPORTS.

	January 1 to March 24. 1918.	1919.
Crude rubber:		
To United Kingdom..*pounds*	3,937,482	5,779,476
France	.....	260,260
[1]Victoria	89,735	.....
[2]New South Wales.....	118,796	62,742
United States	5,355,318	21,863,779
Canada and Newfoundland	412,240	.....
India	659	1,612
Straits Settlements	.....	424
Japan	73,828	105,320
Totals	9,988,058	28,073,613

PLANTATION RUBBER EXPORTS FROM JAVA.

	January. 1918.	1919.
To England ....*kilos.*	73,000	646,000
United States.....	1,071,000	1,423,000
Canada	.....	20,000
Singapore	201,000	539,000
Japan	.....	27,000
Australia	.....	8,000
Other countries.....	19,000	9,000
Totals	1,364,000	2,672,000
From Batavia	774,000	1,332,000
Samarang	50,000	23,000
Soerabays	540,000	1,211,000
Other ports	.....	106,000
Totals	1,364,000	2,672,000

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [April 10, 1919]:

Influenced by early shipping opportunities for America, the weekly rubber auction opened yesterday with a strong demand for all grades, which was continued throughout the sale. Prices, although showing considerable advances on the week, are generally below the level of business reported prior to the opening of the auction. The demand for fine pale crêpe was a feature of the market, and this grade sold up to 79 cents, an advance of 2 cents on the previous week. Fine ribbed smoked sheet opened at 77½ cents and firmed up to 78½ cents (one small lot sold for 79 cents) on the second day, showing an advance of 1 cent. Off quality crêpe and sheet found ready buyers at a few cents up. Brown crêpes were steady round about previous values, while dark and barky crêpes recorded a further advance.

The quantity on offer was unusually small, the total catalog being only 971 tons, of which 631 tons changed hands.

The following is the course of values:

	In Singapore per pound[1]			Sterling Equivalent per pound in London.		
Sheet, fine ribbed smoked.....	76c	@	78½c	2/ 0	@	2/ 0⅝
Sheet, good ribbed smoked.....	70	@	75½	1/10½	@	1/11⅞
Sheet, plain, unsmoked.....	60	@	....	1/ 7½	@	....
Crêpe, fine pale	77	@	79	2/ 0½	@	2/ 1⅛
Crêpe, good pale	71½	@	76½	1/11	@	2/ 0⅜
Crêpe, fine brown.....	64	@	67	1/ 8⅞	@	1/ 9⅜
Crêpe, good brown	54	@	64	1/ 6	@	1/ 8⅞
Crêpe, dark	44	@	57½	1/ 3½	@	1/ 7
Crêpe, bark	35	@	46½	/ 8⅞	@	....
Scrap, virgin and pressed.....	21½	@	....	1/ 0⅝	@	1/ 3⅞
Crêpe, bark	35	@	46½	/11⅜	@	1/ 1½

[1]Quoted in S. S. Currency.

RUBBER EXPORTS FROM THE FEDERATED MALAY STATES.

A report from Kuala Lumpur states that the export of rubber from the Federated Malay States in the month of March amounted to 10,679 tons, which compares with 10,809 tons in February and 7,709 tons in the corresponding month last year. The total exports for the first quarter of the present year are 28,651 tons as against 22,117 tons last year and 20,333 tons in 1917.

Appended are the comparative statistics for three years:

	1917.	1918.	1919.
January .....*tons*	5,995	7,588	7,163
February	7,250	6,820	10,809
March	7,088	7,709	10,679
Totals	20,333	22,117	28,651

STRAITS SETTLEMENTS RUBBER EXPORTS.

A report from Singapore states that the export of cultivated rubber from Straits Settlements ports in the mouth of March amounted to 20,908 tons—the highest on record for one month—compared with 15,661 tons in February and 8,858 tons in the corresponding month last year. The total export for the first quarter of the year is 50,973 tons, as against 15,494 tons last year and 18,356 tons in 1917. Appended is the comparative statistics for three years:

	1917.	1918.	1919.
January .....*tons*	3,562	4,302	14,404
February	6,495	2,334	15,661
March	8,299	8,858	20,908
Totals	18,356	15,494	50,973

EXPORTS OF PLANTATION RUBBER FROM THE FAR EAST.

February, 1919.

	Singapore.	Penang.	Port Swettenham.	Totals.
To United Kingdom..*pounds*	7,931,333	2,816,831	2,217,151	12,965,315
Europe	314,133	.....	.....	314,133
Japan	1,584,267	112,000	.....	1,696,267
Pacific Ports	14,033,200	1,154,828	.....	15,188,028
New York	10,583,732	888,480	545,585	12,017,797
Colombo	.....	75,865	46,951	122,816
Canada	169,734	.....	.....	169,734
Australian Ports	83,467	.....	.....	83,467
Totals	34,699,866	5,048,004	2,809,687	42,557,557

(Compiled by R. F. Bradford, Penang, Straits Settlements.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AT NEW YORK.

Cases.

	Fine.	Medium.	Coarse.	Caucho.	Mixed.	Totals, Pounds.
APRIL 24. By the S. S. *Sergipe*, from Rio de Janeiro.						
H. A. Astlett.....	44	...	302	44	1	223,020
Fruhling & Joschen.....	59	...	278	...	...	190,230
Poel & Kelly.....	385	113	341	140	...	318,980
Neuss, Hesslein & Co.....	...	...	...	177	...	92,040
Paul Bertuch	2,777	...	144	693	...	1,307,190
Lazard Frères	606[1]	...	...	...	...	215,100
Meyer & Brown.....	606[2]	...	...	...	61[3]	108,300
Various	562	198	41	378	...	488,570
APRIL 28. By the S. S. *Panama*, from Cristobal.						
G. Amsinck & Co., Inc....	95	...	...	.....	...	43,250
MAY 3. By the S. S. *Matura*, from Trinidad.						
Gillespie Bros.	..	...	11	...	...	2,640
MAY 8. By the S. S. *Colon*, from Cristobal.						
G. Amsinck & Co., Inc.....	...	...	...	8	...	1,920
MAY 12. By the S. S. *Aidan*, from Maceio.						
General Rubber Co.....	288	27	101	...	...	163,928
Meyer & Brown.....	762	...	145	268 / 630 *pkgs.*	...	278,300
H. A. Astlett & Co.....	79	14	4	141	...	84,732
Poel & Kelly.....	52	30	136	212	5	327,390
I. Chamié.....	117	31	105	136	...	170,838
Fires, Teixeira & Co.....	110	8	59	...	...	62,007
Ferteira, Costa & Co.....	...	...	...	433	...	142,890
W. R. Grace & Co.....	...	...	59	208	...	100,410
G. Fradelizi & Co.....	...	6	...	38	...	14,300
Bitar Irmãos	48	20	104	36	...	148,643
Suarez Filho	1,284[4]	...	630 *bdls.* / 163 *pkgs.*		...	214,431
Various	34	10	393	...	...	169,175

[1] Packages.
[2] Pelles, 63,500 pounds, including medium.
[3] Cametá, 44,800 pounds.
[4] Pelles, 99,664 pounds.

PLANTATIONS.

	Shipment from:	Shipped to:	Pounds.	Totals.
APRIL 19. By the S. S. *Bombay Maru*, at New York.				
J. T. Johnstone & Co., Inc.	Colombo	New York	330,500	
Thomas J. Lipton	Colombo	New York	90,000	
C. C. Trevanion & Co.	Colombo	New York	86,200	
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	15,000	
J. Avon & Co.	Colombo	New York	12,940	
United States Rubber Co.	Colombo	New York	90,000	
F. R. Henderson & Co.	Colombo	New York	20,160	
Rogers-Pyatt Shellac Co.	Colombo	New York	28,800	
Charles T. Wilson Co., Inc.	Colombo	New York	193,500	
Robinson & Co.	Colombo	New York	30,600	
William H. Stiles & Co.	Colombo	New York	23,400	
Hood Rubber Co.	Colombo	New York	39,880	
L. Littlejohn & Co., Inc.	Colombo	New York	459,540	
Poel & Kelly	Colombo	New York	88,560	
Adolph Hirsch & Co.	Colombo	New York	9,000	
Edward Maurer Co., Inc.	Colombo	New York	4,500	
General Rubber Co.	Colombo	New York	112,000	
Meyer & Brown	Colombo	New York	35,280	
Various	Colombo	New York	84,960	1,755,420
APRIL 21. By the S. S. *Jesseric*, at New York.				
J. T. Johnstone & Co., Inc.	Colombo	New York	35,100	
The Goodyear Tire & Rubber Co.	Colombo	New York	300,060	
E. Mannbury & Co.	Colombo	New York	97,560	
Poel & Kelly	Colombo	New York	284,580	
Robinson & Co.	Colombo	New York	9,000	
Littlejohn & Co., Inc.	Colombo	New York	137,520	
Charles T. Wilson & Co.	Colombo	New York	18,000	
Fred Stern & Co.	Colombo	New York	35,820	
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	18,000	
W. R. Grace & Co.	Colombo	New York	46,440	
C. C. Trevanion & Co.	Colombo	New York	57,240	
Hood Rubber Co.	Colombo	New York	130,140	
General Rubber Co.	Colombo	New York	306,360	
L. Traves	Colombo	New York	441,000	
Various	Colombo	New York	563,680	2,480,500
APRIL 22. By the S. S. *Radja*, at New York.				
W. Hammesfahr & Co.	Soerabaya	New York	54,180	
Robinson & Co.	Soerabaya	New York	76,500	
L. Littlejohn & Co., Inc.	Soerabaya	New York	123,120	
Fred Stern & Co.	Soerabaya	New York	237,240	
J. T. Johnstone & Co.	Soerabaya	New York	44,820	
Edward Maurer Co., Inc.	Soerabaya	New York	28,440	
Poel & Kelly	Soerabaya	New York	298,440	
United Malaysian Rubber Co., Inc.	Soerabaya	New York	19,080	
General Rubber Co.	Soerabaya	New York	772,040	
Robinson & Co.	Soerabaya	New York	348,660	
L. Littlejohn & Co., Inc.	Batavia	New York	51,300	
Firestone Tire & Rubber Co.	Batavia	New York	554,220	
Cats American Co., Inc.	Batavia	New York	8,640	
E. S. Kuh & Valk Co.	Batavia	New York	256,860	
The Manhattan Rubber Mfg. Co.	Batavia	New York	54,000	
The Goodyear Tire & Rubber Co.	Batavia	New York	177,860	
Gaston, Williams & Wigmore	Batavia	New York	142,280	
Poel & Kelly	Batavia	New York	89,640	
Edward Maurer Co., Inc.	Batavia	New York	61,380	
A. C. Fox & Co.	Batavia	New York	10,080	
C. B. Van Ryn	Batavia	New York	43,420	
Robinson & Co.	Pasoeroean	New York	47,880	
Gaston, Williams & Wigmore	Pasoeroean	New York	104,040	
Various	Batavia	New York	105,300	3,709,420
APRIL 22. By the S. S. *Canada Maru*, at Seattle.				
G. Kawahara & Co.	Kobe	Seattle	171,000	
Aldens' Successors, Limited	Kobe	Seattle	55,080	
W. R. Grace & Co.	Kobe	New York	42,660	
Firestone Tire & Rubber Co.	Kobe	St. Louis	99,180	367,920
APRIL 23. By the S. S. *Keifuku*, at New York.				
L. Littlejohn & Co., Inc.	Colombo	New York	1,012,500	
Rubber Trading Co.	Colombo	New York	56,160	
Robinson & Co.	Colombo	New York	9,000	
Edward Maurer Co., Inc.	Colombo	New York	48,940	
Poel & Kelly	Colombo	New York	415,080	
Gaston, Williams & Wigmore	Colombo	New York	79,560	
Meyer & Brown	Colombo	New York	629,640	
Charles T. Wilson Co., Inc.	Colombo	New York	141,480	
Rogers-Pyatt Shellac Co.	Colombo	New York	117,720	
The Goodyear Tire & Rubber Co.	Colombo	New York	57,420	
Hood Rubber Co.	Colombo	New York	23,760	
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	17,240	
J. T. Johnstone & Co., Inc.	Colombo	New York	320,060	2,928,560
APRIL 25. By the S. S. *Venezuela*, at San Francisco.				
Aldens' Successors, Limited	Penang	San Fran.	312,660	
F. R. Henderson & Co.	Penang	San Fran	4,320	
United States Rubber Co.	Singapore	New York	439,100	
The Goodyear Tire & Rubber Co.	Colombo	Akron	288,540	
F. R. Henderson & Co.	Colombia	New York	5,400	
Various	Penang	San Fran.	98,280	1,068,300
APRIL 26. By the S. S. *Vennonia*, at New York.				
Poel & Kelly	Liverpool	New York	24,840	
T. T. Downing	Liverpool	New York	18,000	
The B. F. Goodrich Co.	Liverpool	New York	18,180	
Charles T. Wilson Co., Inc.	Liverpool	New York	66,960	
Various	Liverpool	New York	315,360	443,340
APRIL 26. By the S. S. *Anglo Chilean*, at New York.				
Various	London	New York	287,100	287,100
APRIL 26. By the S. S. *Manhattan*, at London.				
Winter, Ross & Co.	London	New York	79,560	
Aldens' Successors, Limited	London	New York	400,320	479,880
APRIL 26. By the S. S. *Belgic*, at New York.				
Vernon Metal & Produce Co., Inc.	Liverpool	New York	11,340	
Various	Liverpool	New York	1,800	13,140
APRIL 26. By the S. S. *Fushimi Maru*, at Seattle.				
L. Littlejohn & Co., Inc.	Colombo	Seattle	30,240	
Edward Maurer Co., Inc.	Colombo	Seattle	60,480	
C. C. Trevanion & Co.	Colombo	Seattle	45,900	
Fred Stern & Co.	Colombo	Seattle	44,280	
Aldens' Successors, Limited	Penang	Seattle	43,920	224,820
APRIL 28. By the S. S. *Lake Copley*, at New York.				
American Trading Co.	Cartagena	New York	4,680	4,680
APRIL 28. By the S. S. *Falstria*, at New York.				
Thomas J. Lipton	Colombo	New York	16,178	
A. C. Fox & Co.	Colombo	New York	42,900	
Fred Stern & Co.	Colombo	New York	56,025	
Charles T. Wilson Co., Inc.	Colombo	New York	36,160	
Hood Rubber Co.	Colombo	New York	22,440	
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	44,960	
E. S. Kuh & Valk Co.	Colombo	New York	8,960	
W. R. Grace & Co.	Colombo	New York	149,221	
William H. Stiles & Co.	Colombo	New York	63,600	
Robinson & Co.	Colombo	New York	97,240	
The Goodyear Tire & Rubber Co.	Colombo	New York	227,140	
Edward Maurer Co., Inc.	Colombo	New York	134,400	
Slater, Forwood & Co.	Colombo	New York	56,050	
L. Littlejohn & Co., Inc.	Colombo	New York	727,622	
Poel & Kelly	Colombo	New York	82,452	
Rubber Trading Co.	Colombo	New York	1,440	1,766,788
APRIL 28. By the S. S. *Oridono Maru*, at Seattle.				
L. Littlejohn & Co., Inc.	Kobe	Seattle	26,160	
Various	Kobe	Seattle	268,920	295,080
APRIL 29. By the S. S. *Nippon Maru*, at Seattle.				
Firestone Tire & Rubber Co.	Singapore	Akron	89,280	
Aldens' Successors, Limited	Singapore	Seattle	3,960	
J. T. Johnstone & Co., Inc.	Penang	New York	120,600	
F. R. Henderson & Co.	Penang	New York	217,900	
L. Littlejohn & Co., Inc.	Penang	Seattle	107,460	
Rockhill & Vietor	Penang	Seattle	111,960	
Mogi & Co.	Penang	Seattle	109,080	
Rubber Importers & Dealers' Co., Inc.	Penang	New York	69,480	
Hood Rubber Co.	Singapore	Watertown	50,400	
[1]Aldens' Successors, Limited	Penang	Seattle	37,160	
J. T. Johnstone & Co., Inc.	Penang	Seattle	250,020	1,167,300
APRIL 29. By the S. S. *Protesilaus*, at Seattle.				
United Malaysian Rubber Co., Inc.	Singapore	Seattle	100,800	
Aldens' Successors, Limited	Singapore	Seattle	70,920	
E. Boustead & Co.	Singapore	Seattle	40,860	
Edward Maurer Co., Inc. Inc.	Singapore	Seattle	40,320	
Raw Products Co.	Singapore	Seattle	34,560	
Aldens' Successors, Limited	Penang	Seattle	405,540	
J. T. Johnstone & Co.,	Penang	Seattle	136,980	
Poel & Kelly	Singapore	New York	758,160	
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	22,320	
Fred Stern & Co.	Singapore	New York	376,200	
Robinson & Co.	Singapore	New York	107,640	
Rubber Trading Co.	Singapore	New York	52,020	
Meyer & Brown	Singapore	Seattle	291,200	

[1] 22 cases shortshipped.

	Shipment from:	Shipped to:	Pounds.	Totals.
Charles T. Wilson Co., Inc.	Singapore	New York	154,240	
L. Littlejohn & Co., Inc.	Singapore	New York	243,000	
Curry, McPhillips & Co., Inc.	Singapore	New York	109,440	
Hood Rubber Co.	Singapore	New York	48,400	
Firestone Tire & Rubber Co.	Singapore	Akron	607,980	
The B. F. Goodrich & Co.	Singapore	Akron	1,766,160	
Hood Rubber Co.	Singapore	Watertown	86,760	
Mexican Rubber Co.	Pt. Swet'n'h'm	New York	36,000	
Various	Singapore	New York	761,760	6,452,140
APRIL 30. By the S. S. *Bloemfontein*, at New York.				
J. T. Johnstone & Co., Inc.	Singapore	New York	388,080	
F. R. Henderson & Co.	Singapore	New York	752,180	
Robinson & Co.	Singapore	New York	159,340	
Fred Stern & Co.	Singapore	New York	908,820	
Poel & Kelly	Singapore	New York	100,800	
L. Littlejohn & Co., Inc.	Singapore	New York	387,000	
Charles T. Wilson Co., Inc.	Singapore	New York	252,180	
Edward Maurer Co., Inc.	Singapore	New York	220,800	
Rubber Trading Co.	Singapore	New York	19,980	
William H. Stiles & Co.	Singapore	New York	205,280	
W. R. Ryckman & Co.	Singapore	New York	48,600	
Hagemeyer Trading Co.	Singapore	New York	23,320	
Meyer & Brown	Singapore	New York	56,000	
W. R. Grace & Co.	Singapore	New York	13,440	
Swinehart Tire & Rubber Co.	Singapore	New York	106,920	
Hood Rubber Co.	Singapore	New York	208,080	
Aldens' Successors, Limited	Singapore	New York	285,380	
Federal Products Co.	Singapore	New York	213,660	
Mexican Crude Rubber Co.	Singapore	New York	89,600	4,439,460
APRIL 30. By the S. S. *Mexico Maru*, at Seattle.				
Aldens' Successors, Limited	Singapore	Seattle	287,640	
F. R. Henderson & Co.	Singapore	New York	87,660	
United Malaysian Co., Inc.	Singapore	New York	141,320	
Mitsui & Co., Inc.	Singapore	New York	185,960	
Charles T. Wilson Co., Inc.	Singapore	New York	368,100	
Edward Maurer Co., Inc.	Singapore	New York	459,540	
Charles Weis & Co.	Singapore	New York	78,120	
Hood Rubber Co.	Singapore	Watertown	96,300	
Rubber Trading Co.	Singapore	New York	180,720	
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	78,840	
Charles Weil & Bohrd.	Singapore	Seattle	74,700	
Raw Products Co.	Singapore	New York	120,960	
William H. Stiles & Co.	Singapore	Tacoma	172,620	
Gates Rubber Co.	Singapore	Denver	720	
Meyer & Brown	Singapore	New York	85,100	
L. Littlejohn & Co., Inc.	Singapore	New York	53,100	
Robinson & Co.	Singapore	New York	94,500	
Various	Singapore	Seattle	20,160	2,586,060
MAY 1. By the S. S. *Defiance*, at New York.				
Curry, McPhillips & Co.	London	New York	276,300	
Various	London	New York	94,320	370,620
MAY 5. By the S. S. *City of Norwich*, at New York.				
Meyer & Brown	Colombo	New York	481,600	481,600
MAY 7. By the S. S. *Persia Maru*, at San Fran.				
Poel & Kelly	Penang	San Fran.	34,020	
L. Littlejohn & Co., Inc.	Singapore	New York	30,240	
Rubber Importers' & Dealers' Co., Inc.	Hongkong	New York	45,540	109,800
MAY 9. By the S. S. *Baltic*, at New York.				
Various	Liverpool	New York	180	180
MAY 12. By the S. S. *Paris*, at New York				
American Trading Co.	Cartagena	New York	5,220	
Andean Trading Co.	Cartagena	New York	1,980	
Various	Cartagena	New York	3,600	10,900
MAY 13. By the S. S. *Bolton Castle*, at New York.				
F. R. Henderson & Co.	Singapore	New York	466,740	
United Malaysian Rubber Co.	Singapore	New York	99,000	
L. Littlejohn & Co., Inc.	Singapore	New York	956,340	
Fred Stern & Co.	Singapore	New York	733,320	
E. S. Kuk & Valk Co.	Singapore	New York	210,440	
E. Naunburg	Singapore	New York	54,000	
Balfour, Williamson & Co.	Singapore	New York	158,400	
J. T. Johnstone & Co., Inc.	Singapore	New York	180,180	
Robinson & Co.	Singapore	New York	275,580	
W. R. Grace & Co.	Singapore	New York	37,260	
Rubber Trading Co.	Singapore	New York	24,480	
The Goodyear Tire & Rubber Co.	Singapore	New York	608,400	
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	122,400	
Meyer & Brown	Singapore	New York	840,000	
Edward Maurer Co., Inc.	Singapore	New York	24,300	
Curry, McPhillips & Co.	Singapore	New York	210,240	
Charles T. Wilson Co., Inc.	Singapore	New York	274,680	
Raw Products Co.	Singapore	New York	106,380	
S. Katz	Singapore	New York	180	
Obalski & Sweeney	Singapore	New York	53,820	
Moraux & Co.	Singapore	New York	44,820	
Nostrand & Rademaker.	Singapore	New York	180	
Gaston, Williams & Wigmore	Singapore	New York	63,720	
United States Rubber Co.	Singapore	New York	973,620	
Hood Rubber Co.	Singapore	New York	39,780	
Swinehart Tire & Rubber Co.	Singapore	New York	112,140	
Firestone Tire & Rubber Co.	Singapore	New York	401,580	
Mexican Crude Rubber Co.	Port Swettenham	New York	184,860	
W. R. Grace & Co.	Port Swettenham	New York	77,760	
F. R. Henderson & Co.	Penang	New York	71,280	
Hood Rubber Co.	Penang	New York	27,000	
W. R. Grace & Co.	Penang	New York	39,060	
Various	Singapore	New York	530,100	7,685,900
MAY 14. By the S. S. *Tancredo*, at New York.				
Meyer & Brown	Singapore	San Fran.	183,300	183,300
MAY 16. By the S. S. *Courageous*, at New York.				
Gravenhorst & Co.	Kahului	New York	25,200	25,200
MAY 16. By the S. S. *Transvaal*, at San Francisco.				
L. Littlejohn & Co., Inc.	Singapore	New York	781,564	
J. T. Johnstone & Co., Inc.	Singapore	New York	97,200	
Robinson & Co.	Singapore	New York	61,200	
Poel & Kelly	Singapore	New York	61,200	
Meyer & Brown	Singapore	New York	99,000	
Rubber Trading Co.	Singapore	New York	112,000	
William H. Stiles & Co.	Singapore	New York	61,920	
MAY 19. By the S. S. *Orduna*, at New York.				
The B. F. Goodrich Co.	Liverpool	Akron	38,520	
Poel & Kelly	Liverpool	New York	170,640	209,160
Charles T. Wilson Co., Inc.	Liverpool	New York	5,940	
Vernon Metal & Produce Co., Inc.	Liverpool	New York	14,760	20,700
MAY 19. By the S. S. *Independence*, at New York.				
T. D. Downing & Co.	London	New York	67,500	67,500
MAY 20. By the S. S. *Tyndareus*, at New York.				
Meyer & Brown	Singapore	Seattle	291,200	291,200
MAY 20. By the S. S. *Senator*, at New York.				
Meyer & Brown	Singapore	Seattle	112,000	112,000
CENTRALS.				
APRIL 28. By the S. S. *Panama*, at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	11,900	
J. S. Sembrada Co.	Cristobal	New York	4,000	
Comacho Roedan	Cristobal	New York	9,500	
Various	Cristobal	New York	1,700	27,100
MAY 7. By the S. S. *Abangarez*, at New York.				
Pablo Calvet & Co.	Cristobal	New York	1,400	1,400
MAY 8. By the S. S. *Colon*, at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	1,500	
Charles E. Griffin	Cristobal	New York	2,800	
De Lima Correa & Cortissoz	Cristobal	New York	500	
Heilbron, Wolff & Co.	Cristobal	New York	1,800	
Various	Cristobal	New York	200	6,800
MAY 10. By the S. S. *Allianca*, at New York.				
Isaac Brandon	Cristobal	New York	125	125
MAY 16. By the S. S. *Mayaro*, at New York.				
Various	Trinidad	New York	300	300
MAY 19. By the S. S. *Tivivas*, at New York.				
Isaac Brandon & Bros.	Port Limón	New York	700	700
BALATA.				
APRIL 19. By the S. S. *Advance*, at New York.				
Various	Cristobal	New York	6,900	6,900
APRIL 28. By the S. S. *Panama*, at New York.				
Hollinghurst & Co.	Cristobal	New York	600	600
MAY 3. By the S. S. *Matura*, at New York.				
Yglesias & Co., Inc.	Trinidad	New York	10,000	
R. Fabion & Co.	Trinidad	New York	10,000	20,000
MAY 2. By the S. S. *Philadelphia*, at New York.				
G. Amsinck & Co., Inc.	La Guaira	New York	.....	1,350
MAY 21. By the S. S. *Michigan*, at New York.				
Poel & Kelly	London	New York	125,100	125,100
PONTIANAK.				
APRIL 22. By the S. S. *Radja*, at New York.				
E. S. Kuk & Valk Co.	Soerabaya	New York	10,000	
Various	Soerabaya	New York	207,000	217,000
APRIL 30. By the S. S. *Bloemfontein*, at New York.				
United Malaysian Rubber Co.	Singapore	New York	93,300	93,300
MAY 13. By the S. S. *Bolton Castle*, at New York.				
D. W. Bousted & Co.	Singapore	New York	13,510	
L. Littlejohn & Co., Inc.	Singapore	New York	264,250	
Fred Stern & Co.	Singapore	New York	75,500	
Various	Singapore	New York	106,500	459,760

GUTTA PERCHA.

	Shipment from:	Shipped to:	Pounds.	Totals.
APRIL 22. By the S. S. *Radja*, at New York.				
United Malaysian Rubber Co.	Soerabaya	New York	15,500	15,600
MAY 1. By the S. S. *Defiance*, at New York.				
Carle Bros.	London	New York	51,150	51,150
MAY 13. By the S. S. *Bolton Castle*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	12,250	12,250
APRIL 30. By the S. S. *Bloemfontein*, at New York.				
Various	Singapore	New York	3,250	3,250

GUTTA SIAK.

APRIL 30. By the S. S. *Bloemfontein*, at New York.				
United Malaysian Rubber Co.	Singapore	New York	305,000	305,000
MAY 21. By the S. S. *Michigan*, at New York.				
Various	London	New York	22,000	22,000

AFRICANS.

APRIL 28. By the S. S. *Chicago*, at New York.				
Various	Bordeaux	New York	118,105	118,105
MAY 16. By the S. S. *Nembe*, at New York.				
Innez & Co.	Dokas	New York	47,875	
Alex Roberts Co.	Dokas	New York	24,875	
Various	Dokas	New York	3,750	76,500
MAY 17. By the S. S. *Hudson*, at New York.				
Various	Bordeaux	New York	93,035	93,035

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

	Month Ended March 31. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
UNMANUFACTURED—				
Crude rubber:				
From—				
Dutch East Indies	107,200	£12,693	1,544,100	£170,662
French West Africa	47,000	2,116	.....	.....
Gold Coast	8,400	985	27,300	3,696
Other African countries	571,000	58,183	492,900	51,156
Peru	220,900	23,226	33,100	4,323
Brazil	2,491,200	321,539	2,237,200	240,898
British India	396,400	51,143	2,235,200	249,941
Straits Settlements and dependencies, including Labuan	562,600	68,625	7,365,000	792,931
Federated Malay States	187,300	24,069	4,538,300	530,116
Ceylon dependencies	1,356,800	159,410	3,479,400	386,724
Other countries	217,200	25,339	435,100	50,345
Totals	6,166,000	£747,328	22,287,600	£2,480,792
Waste and reclaimed rubber	30,300	344	80,400	2,140
Totals	6,196,300	£747,672	22,468,000	£2,482,932
Gutta percha	636,900	119,681	890,400	201,792
MANUFACTURED—				
Boots and shoes..*dozen pairs*	5,305	£59,876	3,538	£5,495
Waterproofed clothing	.....	.....	.....	893
Automobile tires and tubes	.....	95,215	.....	83,871
Motorcycle tires and tubes	.....	1,459	.....	4,711
Carriage tires and tubes	.....	160	.....	.....
Bicycle tires and tubes	.....	2,479	.....	60
Insulated wire	.....	.....	.....	2,472
Totals	.....	£159,189	.....	£97,502

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber	890,500	£20,341	790,700	£20,634
MANUFACTURED—				
Waterproofed clothing	.....	33,519	.....	86,262
Boots and shoes..*dozen pairs*	7,953	9,156	6,187	11,631
Insulated wire	.....	5,699	.....	32,757
Submarine cables	.....	3,811	.....	47,496
Carriage tires and tubes	.....	8,564	.....	27,991
Automobile tires and tubes	.....	109,492	.....	212,361
Motorcycle tires and tubes	.....	8,352	.....	30,884
Bicycle tires and tubes	.....	29,319	.....	73,478
Other rubber manufactures	.....	138,520	.....	262,547
Totals	.....	£346,432	.....	£785,407

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Belgium	.....	.....	120,100	£12,181
France	3,398,800	£438,201	3,914,800	404,123
Italy	450,900	59,378	1,202,000	136,233
United States	233,000	20,942	8,585,000	878,446
Other countries	95,000	11,540	446,000	51,299
Totals	3,177,700	£530,061	14,267,900	£1,482,282
Waste and reclaimed rubber	.....	.....	2,100	90
Totals	4,177,700	£530,061	14,270,000	£1,482,372
Gutta percha	4,700	428	69,900	13,613
MANUFACTURED—				
Boots and shoes..*dozen pairs*	9	£13	1	£13
Waterproofed clothing	.....	32	.....	248
Insulated wire	.....	.....	.....	139
Automobile tires and tubes	.....	18,143	.....	11,776
Motorcycle tires and tubes	.....	£158	.....	£733
Bicycle tires and tubes	.....	691	.....	1,548
Carriage tires and tubes	.....	282	.....	153
Totals	.....	£19,319	.....	£14,710

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	March. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
UNMANUFACTURED—*free:*				
India rubber:				
From France	43,851	$16,315	181,784	$50,403
Portugal	32,469	16,235	.....	.....
United Kingdom	336,649	164,854	8,543,628	4,059,734
Canada	.....	.....	3,303,663	1,586,119
Central America	75,513	29,525	68,729	22,016
Mexico	63,609	20,809	106,319	47,788
Brazil	678,654	206,744	6,439,808	2,046,296
Peru	5,164	2,530	1,666,827	556,936
Other South America	243,213	107,147	205,870	68,622
British East Indies	22,907,284	12,093,316	41,483,959	15,991,931
Dutch East Indies	3,442,734	1,804,232	2,534,091	1,108,647
Other countries	21,970	9,746	106,289	42,935
Totals	27,851,110	$14,471,453	64,640,967	$25,581,427
Balata	116,713	72,021	39,804	24,344
Guayule	4,700	2,162	420,927	107,877
Jelutong (Pontianak)	811,044	66,125	1,678,754	250,871
Gutta percha	19,564	1,910	1,009,209	156,902
Totals	952,021	$142,218	3,148,694	$539,994
Rubber scrap	1,050,490	80,181	378,209	21,234
Totals, unmanufactured	29,853,621	$14,693,852	68,168,070	$26,142,655
Chicle	580,803	370,503	849,307	563,200
MANUFACTURED—*dutiable:*				
India rubber and gutta percha	.....	$28,485	.....	77,362
India rubber substitutes	.....	29,127	7,850	1,274

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires[1]	.....	$934,631	.....	$1,891,220
All other tires[1]	.....	37,839	.....	112,441
Scrap and old	406,160	33,631	261,495	26,049
Reclaimed rubber	434,877	75,314	279,933	46,136
Belting, hose, and packing[1]	.....	284,786	.....	575,449
Rubber boots[1] ..... *pairs*	32,835	100,576	18,048	56,836
Rubber shoes[1] ..... *pairs*	59,729	50,555	560,948	377,621
Druggists' rubber sundries[1]	.....	37,117	.....	99,466
Insulated wire and cables[1]	.....	550,738	.....	1,025,867
Other rubber manufactures[1]	.....	296,303	.....	681,809
Totals, manufactured	.....	$2,401,590	.....	$4,892,894
Fountain pens ..... *number*	5,789	5,122	17,519	21,591

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	1,041,492	$503,396	405,067	$192,991
Balata	159,693	106,194	28,000	18,417
Gutta percha	8,297	2,500	.....	.....
Totals, unmanufactured	1,209,482	$612,090	433,067	$211,408
MANUFACTURED—				
India rubber	.....	$40	.....	.....
Gutta percha	.....	22	.....	$234
Rubber substitutes, elasticon, etc.	.....	661	.....	.....
Totals, manufactured	.....	$723	.....	$234
Chicle	28,889	14,567	10	12

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—.				
To Alaska:				
Belting, hose, and packing	.....	$2,372	.....	$9,319
Boots and shoes.....*pairs*	4,784	15,438	9,400	29,606
Other rubber goods	.....	22,441	.....	5,693
Totals	.....	$40,251	.....	$44,618
To Hawaii:				
Belting, hose and packing	.....	$7,830	.....	$17,741
Automobile tires	.....	40,777	.....	149,812
Other tires	.....	2,490	.....	7,429
Other rubber goods	.....	8,476	.....	11,728
Totals	.....	$59,573	.....	$186,710
To Philippine Islands:				
Belting, hose and packing	.....	$16,441	.....	$4,959
Boots and shoes.....*pairs*	29,314	25,935	19,111	17,665
Tires	.....	188,528	.....	108,301
Other goods	.....	22,476	.....	22,663
Totals	.....	$253,380	.....	$153,588
To Porto Rico:				
Belting, hose and packing	.....	$3,983	.....	$6,915
Automobile tires	.....	47,902	.....	97,971
Other tires	.....	889	.....	2,001
Other rubber goods	.....	8,197	.....	35,016
Totals	.....	$60,971	.....	$141,903

[1] Details of exports of domestic merchandise by countries during March, 1919, are given on page 528 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF MARCH, 1919.

EXPORTED TO—	Belting, Hose and Packing.	Boots.		Shoes.		Druggists' Rubber Sundries.	Tires.		Insulated Wire and Cable.	All Other Manufactures.	Totals.
EUROPE:	Value.	Pairs.	Value.	Pairs.	Value.	Value.	Automobile. Value.	All Others. Value.	Value.	Value.	Value.
Belgium	.....	.....	.....	.....	.....	.....	$29,016	$30,655	.....	.....	$59,671
Denmark	$4,776	.....	.....	38,282	$15,486	$2,503	44,468	1,756	$32,105	$9,306	110,400
France	3,140	.....	.....	.....	.....	5,156	64,993	2,082	3,780	101,271	180,422
Greece	.....	200	$1,800	.....	.....	.....	605	17	200	6,655	9,277
Iceland and Faroe Islands	122	240	664	3,552	5,075	3,051	2,530	186	1,210	2,194	15,032
Italy	719	.....	.....	.....	.....	45	.....	.....	.....	.....	764
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	.....	14	.....	.....	.....	.....	14
Norway	5,202	.....	.....	79,165	59,047	2,087	91,582	6,886	445,839	16,990	627,633
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	2,300	.....	2,300
Russia in Europe	.....	.....	.....	8,872	13,308	.....	.....	.....	.....	.....	13,305
Spain	320	144	528	2,563	1,742	1,298	95,193	.....	11,413	18,988	129,482
Sweden	2,531	.....	.....	238	193	2,135	8,625	9,367	39,414	6,838	69,103
Switzerland	47	.....	.....	.....	.....	.....	.....	.....	2,256	.....	2,303
England	22,010	.....	.....	153,947	89,286	17,063	104,268	.....	12,260	121,886	366,773
TOTALS, EUROPE	$38,867	584	$2,992	286,669	$184,137	$33,352	$441,280	$50,949	$550,777	$284,128	$1,586,482
NORTH AMERICA:											
Bermuda	$190	12	$32	32	$17	$225	$159	.....	.....	$185	$808
British Honduras	10	.....	.....	3,207	3,757	40	202	$72	$238	24	4,343
Canada	23,370	4,297	13,858	23,161	20,470	18,211	116,748	4,302	7,169	136,825	340,953
Costa Rica	548	.....	.....	12	12	59	2,614	.....	1,039	1,475	5,747
Guatemala	1,031	.....	.....	.....	.....	40	2,434	616	202	1,079	5,402
Honduras	794	.....	.....	.....	.....	26	469	.....	158	397	1,844
Nicaragua	1,178	.....	.....	200	160	56	910	.....	291	447	3,042
Panama	12,643	.....	.....	.....	.....	510	20,999	305	1,493	518	36,468
Salvador	400	.....	.....	.....	.....	.....	3,191	.....	330	755	4,676
Mexico	97,130	10	32	3,436	3,999	9,911	55,511	3,880	29,270	15,759	215,492
Miquelon, Langley, etc.	96	538	1,603	404	220	.....	.....	.....	.....	.....	1,919
Newfoundland and Labrador	958	6,109	18,110	5,789	5,951	99	407	143	819	8,376	34,863
Barbados	175	.....	.....	646	770	213	2,286	945	83	278	4,750
Jamaica	524	.....	.....	1,172	650	34	22,747	.....	75	597	24,627
Trinidad and Tobago	1,146	.....	.....	.....	.....	16	1,000	.....	296	561	3,019
Other British West Indies	534	.....	.....	514	475	254	1,907	388	22	151	3,731
Cuba	33,243	.....	.....	126,169	64,608	4,804	233,855	6,831	40,344	33,238	416,923
Danish West Indies	23	.....	.....	236	240	82	291	9	.....	60	705
Dutch West Indies	912	.....	.....	.....	.....	17	1,009	.....	1	54	1,993
French West Indies	1,145	.....	.....	24	20	36	14,415	658	190	1,512	17,976
Haiti	219	.....	.....	84	62	8	217	.....	20	159	685
Dominican Republic	1,815	.....	.....	288	388	240	4,646	627	1,368	421	9,505
TOTALS, NORTH AMERICA	$178,084	10,966	$33,635	165,374	$101,799	$34,881	$486,017	$18,776	$83,408	$202,871	$1,139,471
SOUTH AMERICA:											
Argentina	$24,702	.....	.....	1,932	$1,893	$4,727	$123,263	$9,105	$94,445	$17,027	$275,162
Bolivia	1,448	.....	.....	.....	.....	3	283	.....	55	51	1,840
Brazil	29,329	107	$570	2,544	1,788	2,446	82,106	34	117,654	14,340	248,267
Chile	19,427	.....	.....	5,436	3,965	3,743	45,498	944	3,207	5,589	82,373
Colombia	1,055	.....	.....	1,082	1,142	474	7,264	1,247	5,734	2,804	19,720
Ecuador	280	.....	.....	.....	.....	564	2,239	.....	2,170	15	5,268
British Guiana	.....	.....	.....	4,324	5,646	.....	19,261	.....	686	186	25,779
Dutch Guiana	.....	.....	.....	.....	.....	.....	125	.....	75	153	353
French Guiana	.....	4	20	.....	.....	.....	.....	.....	.....	.....	20
Paraguay	252	.....	.....	106	114	.....	1,982	.....	.....	115	2,463
Peru	13,404	.....	.....	.....	.....	646	6,735	20	18,552	2,464	41,821
Uruguay	5,465	.....	.....	1,308	721	1,222	11,932	633	31,065	4,470	55,508
Venezuela	452	.....	.....	.....	.....	273	22,796	249	428	1,705	25,903
TOTALS, SOUTH AMERICA	$95,814	111	$590	16,732	$15,269	$14,098	$323,484	$12,232	$274,071	$48,919	$784,477
ASIA:											
China	$12,602	41	$169	18,927	$15,767	$5,022	$37,549	.....	$15,281	$13,686	$100,076
Japanese China	.....	.....	.....	.....	.....	.....	.....	.....	.....	666	666
Chosen	.....	.....	.....	3	3	.....	2,051	.....	.....	2,111	4,165
British India	4,015	.....	.....	88	140	296	3,366	.....	22,940	1,330	32,087
Straits Settlements	198	.....	.....	72	90	102	4,070	$32	185	.....	4,677
Dutch East Indies	1,644	.....	.....	1,186	1,501	77	218,324	3,412	32,880	17,172	275,010
French East Indies	150	.....	.....	.....	.....	.....	.....	.....	.....	345	495
Hongkong	2,295	12	38	18	13	133	3,473	.....	21	529	6,502
Japan	78,213	1,944	5,399	29,132	23,360	341	145,269	140	3,151	48,702	304,575
Russia in Asia	6,311	.....	.....	7,200	7,500	.....	.....	.....	.....	.....	13,811
Siam	.....	.....	.....	.....	.....	11	400	.....	.....	435	846
TOTALS, ASIA	$105,428	1,997	$5,606	56,626	$48,374	$5,982	$414,502	$3,584	$74,458	$84,976	$742,910
OCEANIA:											
Australia	$21,290	144	$644	6,279	$3,512	$7,255	$33,548	$2,863	$13,304	$16,008	$98,424
New Zealand	5,447	3,756	12,509	.....	.....	1,068	13,452	6,311	781	8,426	47,994
Other British Oceania	.....	.....	.....	.....	.....	14	344	.....	.....	30	388
French Oceania	40	.....	.....	144	144	6	3,089	698	.....	415	4,392
German Oceania	15	.....	.....	108	170	.....	976	72	.....	48	1,281
Philippine Islands	4,959	288	357	18,823	17,308	2,598	94,770	13,531	8,176	26,065	161,764
TOTALS, OCEANIA	$31,751	4,188	$13,510	25,354	$21,134	$10,941	$146,179	$23,475	$22,261	$44,992	$314,243
AFRICA:											
Belgian Kongo	$56,604	.....	.....	.....	.....	.....	.....	.....	.....	.....	$56,604
British West Africa	45	.....	.....	.....	.....	.....	$39,311	$229	$215	$242	40,042
British South Africa	67,140	202	$503	9,893	$6,735	$392	36,618	3,196	17,168	15,530	147,282
British East Africa	.....	.....	.....	300	173	.....	500	.....	.....	.....	673
French Africa	467	.....	.....	.....	.....	.....	2,839	.....	.....	.....	3,306
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Morocco	904	.....	.....	.....	.....	.....	.....	.....	.....	.....	904
Portuguese Africa	345	.....	.....	.....	.....	.....	.....	.....	.....	150	495
Egypt	.....	.....	.....	.....	.....	.....	490	.....	3,509	.....	3,999
TOTALS, AFRICA	$125,505	202	$503	10,193	$6,908	$392	$79,758	$3,425	$20,892	$15,923	$253,306
TOTALS	$575,449	18,048	$56,836	560,948	$377,621	$99,646	$1,891,220	$112,441	$1,025,867	$681,809	$4,820,889

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

Official India Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1918.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
France	508,017	$225,803
Portugal	538,076	220,133
England	21,926,945	12,793,606
Totals, Europe	22,973,038	$13,239,542
NORTH AMERICA—		
British Honduras	999	$323
Canada	4,247,287	2,518,248
Central American States		
Costa Rica	50,387	25,646
Guatemala	70,839	20,755
Honduras	29,246	13,880
Nicaragua	300,880	111,199
Panama	255,252	104,105
Salvador	28,411	11,339
Mexico	1,033,087	451,915
West Indies—		
British—		
Trin. and Tobago	55,016	31,932
Other British	9,497	7,175
Cuba	4,390	1,452
Dominican Republic	4,839	3,544
Totals, North America	6,090,130	$3,301,513
SOUTH AMERICA—		
Argentina	912,604	$302,874
Brazil	41,277,914	14,307,158
Chile	9,055	3,716
Colombia	1,042,697	436,423
Ecuador	631,107	256,526
Guiana—		
British	60,646	42,885
Dutch	8,239	5,525
Paraguay	7,938	3,105
Peru	3,565,094	1,471,823
Uruguay	53,892	33,520
Venezuela	456,427	214,783
Totals, South America	48,025,613	$17,078,332
ASIA—		
China	11,763	$5,605
China, leased territory—		
French	15,680	6,041
East Indies—		
British—		
British India	5,758,850	2,782,122
Straits Settlem'ts	221,389,870	117,901,120
Other British	31,097,004	17,641,754
Dutch	53,663,857	30,504,525
Hongkong	324,703	208,252
Japan	61,160	37,481
Totals, Asia	312,322,887	$169,086,900
OCEANIA—		
British—		
Australia	4,721	$3,883
New Zealand	6,855	3,324
Other British	17,409	12,041
German	10,850	6,039
Philippine Islands	80,644	40,698
Totals, Oceania	120,479	$65,985
AFRICA—		
British West Africa	23,840	$7,591
British South Africa	4,614	2,721
Portuguese Africa	38,414	17,808
Totals, Africa	66,868	$28,120
Totals, 1917-18	389,599,015	$202,800,392
Totals, 1916-17	333,373,711	189,328,674
Totals, 1915-16	267,775,557	155,044,790
Totals, 1914-15	172,068,428	83,030,269
Totals, 1913-14	131,995,742	71,219,851
Totals, 1912-13	113,384,359	90,170,316
Totals, 1911-12	110,210,173	93,013,255
Totals, 1910-11	72,046,260	76,244,603
Totals, 1909-10	101,044,681	101,078,825
Totals, 1908-09	88,359,895	61,709,723
Totals, 1907-08	62,233,160	36,613,185
Totals, 1906-07	76,963,838	58,919,981
Totals, 1905-06	57,844,345	45,114,450

IMPORTS OF CRUDE INDIA RUBBER BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
Massachusetts	4,327,090	$1,979,103
New York	171,643,218	83,365,120
Philadelphia	15,792	6,601
Florida	2,098	852
New Orleans	193,412	91,803
San Antonio	33,190	8,903
San Francisco	80,907,215	47,415,050
Southern California	160,136	103,201
Washington	107,089,467	56,395,269
Buffalo	2,102,470	1,184,422
Chicago	809,095	466,643
Dakota	3,471,093	1,656,887
Michigan	1,820,822	1,133,196
Ohio	12,944,474	6,932,047
St. Lawrence	435,388	217,432
Vermont	3,344,487	1,694,079
Minnesota	299,568	149,784
Totals, 1917-18	389,599,015	$202,800,392

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES (DUTIABLE).

[+ indicates increase; — indicates decrease, compared with preceding year.]

From—	Value.
EUROPE—	
France	$3,949—
Italy	487—
Portugal	3+
Spain	2,818+
Sweden	2,252+
United Kingdom—	
England	284,128—
Scotland	19,078—
Ireland	5+
Total, Europe	$312,720—
NORTH AMERICA—	
Canada	$174,756+
Panama	2+
Mexico	250+
Total, North America	$175,008+
SOUTH AMERICA—	
Brazil	$4+
Colombia	2,900+
Ecuador	1,594+
Total, South America	$4,498+
ASIA—	
Straits Settlements	$69,415+
Dutch East Indies	6,653+
Hongkong	34—
Japan	31,435+
Total, Asia	$107,537+
Total, 1917-18	$599,763
Total, 1916-17	608,954
Total, 1915-16	398,020
Total, 1914-15	791,281
Total, 1913-14	1,517,789
Total, 1912-13	1,217,236
Total, 1911-12	874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,262,783
Total, 1905-06	1,992,413

IMPORTS OF INDIA RUBBER BY CUSTOMS DISTRICTS (DUTIABLE).

At—	Value.
Maine and New Hampshire	$2,628
Maryland	3,215
Massachusetts	25,393
New York	487,909
Philadelphia	337
Porto Rico	664
Rhode Island	104
Florida	1
Galveston	135
New Orleans	6
Alaska	1,461
Hawaii	3
Oregon	6,632
San Francisco	46
Southern California	...
Washington	627
Buffalo	3,076
Chicago	6,803
Dakota	143
Michigan	47,850
Montana and Idaho	601
Ohio	2,236
Rochester	297
St. Lawrence	681
Vermont	264
Wisconsin	76
Minnesota	10
Omaha	400
Pittsburgh	4,694
St. Louis	6
Utah and Nevada	60
Total, 1917-18	$599,763

REEXPORTS OF IMPORTED CRUDE INDIA RUBBER.

To—	Pounds.	Value.
France	21,660	$17,328
England	140	135
Canada	7,649,751	3,937,322
Cuba	274,107	152,507
Japan	9,798	6,443
Australia	252,824	160,808
Totals, 1917-18	8,208,280	$4,274,543
Totals, 1916-17	12,355,898	7,304,820
Totals, 1915-16	4,662,889	2,661,331
Totals, 1914-15	6,383,145	3,361,107
Totals, 1913-14	3,747,749	2,398,150
Totals, 1912-13	5,272,387	4,476,379
Totals, 1911-12	5,610,951	4,890,905
Totals, 1910-11	5,267,588	5,439,282
Totals, 1909-10	6,492,947	7,629,380
Totals, 1908-09	3,791,971	2,964,496
Totals, 1907-08	4,110,667	2,994,208
Totals, 1906-07	4,215,350	3,593,912

REEXPORTS OF MANUFACTURES OF INDIA RUBBER.

To—	Value.
England	$1,082
Canada	10,461
Nicaragua	19
Mexico	862
Cuba	174
Dominican Republic	9
New Zealand	954
Other British	2
Total, 1917-18	$13,563
Total, 1916-17	10,905
Total, 1915-16	38,649
Total, 1914-15	7,489
Total, 1913-14	7,638
Total, 1912-13	7,973
Total, 1911-12	6,681
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
England	22,791	$6,239
NORTH AMERICA—		
Canada	250	$11
SOUTH AMERICA—		
Colombia	1,104	$207
ASIA—		
Straits Settlements	543,766	$75,487
Dutch East Indies	547,944	56,206
Totals, Asia	1,091,710	$131,693
OCEANIA—		
Philippine Islands	13,057	$1,781
AFRICA—		
British West Africa	22,400	$7,392
Totals, 1917-18	1,151,312	$147,323
Totals, 1916-17	2,021,794	332,223
Totals, 1915-16	3,188,449	342,226
Totals, 1914-15	1,618,214	230,750
Totals, 1913-14	1,846,109	323,567
Totals, 1912-13	480,853	167,313
Totals, 1911-12	1,204,406	225,797
Totals, 1910-11	1,648,921	390,548
Totals, 1909-10	784,501	167,873
Totals, 1908-09	255,559	82,136
Totals, 1907-08	188,610	100,305
Totals, 1906-07	546,890	201,339
Totals, 1905-06	500,770	188,161

IMPORTS OF CRUDE GUTHA PERCHA BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	875,631	$111,487
San Francisco	101,253	17,646
Washington	174,178	18,179
Dakota	250	11
Totals	1,151,312	$147,323

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES (DUTIABLE).

From—	Value.
EUROPE—	
Switzerland	$2,564
Spain	3
United Kingdom—	
England	7,176
Scotland	5,388
Ireland	1,659
Total, Europe	$16,790
NORTH AMERICA—	
Canada	$188
Total, 1917-18	$16,978
Total, 1916-17	173,575
Total, 1915-16	57,875
Total, 1914-15	10,841
Total, 1913-14	42,023
Total, 1912-13	77,300
Total, 1911-12	41,098
Total, 1910-11	61,283
Total, 1909-10	80,567
Total, 1908-09	71,819
Total, 1907-08	93,545

IMPORTS OF MANUFACTURED GUTTA PERCHA BY CUSTOMS DISTRICTS (DUTIABLE).

At—	Value.
Maryland	$31
Massachusetts	455
New York	16,454
Porto Rico	3
Duluth and Superior	7
Rochester	28
Total	$16,978

REEXPORTS OF CRUDE GUTTA PERCHA.

To—	Pounds.	Value.
England	182,646	$44,611
Canada	20,000	2,600
Totals, 1917-18	202,646	$47,211
Totals, 1916-17	763	558
Totals, 1915-16	60,023	11,446
Totals, 1914-15	9,457	4,603
Totals, 1913-14	14,649	5,255
Totals, 1912-13	22,352	2,665
Totals, 1911-12	1,011	945
Totals, 1910-11	62,391	19,235
Totals, 1909-10	74,137	13,886
Totals, 1908-09	9,370	3,730
Totals, 1907-08	.....	.....
Totals, 1906-07	5,000	700

REEXPORTS OF MANUFACTURES OF GUTTA PERCHA.

To—	Value.
England	$4,552
Canada	13,608
Mexico	50
British West Indies	6
Total, 1917-18	$18,216
Total, 1916-17	421
Total, 1915-16	537
Total, 1914-15	.....
Total, 1913-14	.....
Total, 1912-13	.....
Total, 1911-12	65
Total, 1910-11	8,687

GUAYULE.

IMPORTS OF GUAYULE BY COUNTRIES (FREE).

From—	Pounds.	Value.
NORTH AMERICA—		
Mexico	4,298,739	$1,337,047
SOUTH AMERICA—		
Colombia	8,800	$4,048
Totals, 1917-18	4,307,539	$1,341,095
Totals, 1916-17	2,854,372	764,484
Totals, 1915-16	2,816,068	880,813
Totals, 1914-15	5,111,849	1,441,367
Totals, 1913-14	1,475,804	607,076
Totals, 1912-13	10,218,191	4,345,088
Totals, 1911-12	14,238,625	6,463,787
Totals, 1910-11	19,749,522	10,443,157

IMPORTS OF GUAYULE BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	8,800	$4,048
El Paso	47,950	8,631
San Antonio	4,250,789	1,328,416
Totals	4,307,539	$1,341,095

REEXPORTS OF GUAYULE.

To—	Pounds.	Value.
Canada	17,723	$5,231

JELUTONG.

IMPORTS OF JELUTONG BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
England	2,675	$113
SOUTH AMERICA—		
Colombia	16,825	$4,238
ASIA—		
Straits Settlements	5,260,657	$344,002
Other British Indies	28,000	2,800
Dutch East Indies	2,135,688	119,738
Japan	37,447	3,475
Totals, Asia	7,461,792	$470,015
Totals, 1917-18	7,481,292	$474,366
Totals, 1916-17	.....	.....
Totals, 1915-16	27,858,335	1,322,262
Totals, 1914-15	14,851,264	731,995
Totals, 1913-14	24,926,571	1,155,402
Totals, 1912-13	45,345,338	2,174,441
Totals, 1911-12	48,795,268	2,255,050
Totals, 1910-11	51,420,872	2,872,633
Totals, 1909-10	52,392,444	2,419,223
Totals, 1908-09	24,826,296	852,372
Totals, 1907-08	22,803,303	1,039,776
Totals, 1906-07	28,437,660	1,085,098

IMPORTS OF JELUTONG BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	4,557,594	$282,307
San Francisco	893,118	77,253
Washington	2,019,085	113,386
Vermont	11,495	1,420
Totals	7,481,292	$474,366

IMPORTS OF JELUTONG BY COUNTRIES (DUTIABLE).

From—	Pounds.	Value.
ASIA—		
Straits Settlements	7,587,259	$387,728
Dutch East Indies	2,188,232	103,744
Japan	219,080	9,978
Totals, 1917-18	9,994,571	$501,450
Totals, 1916-17	23,376,389	1,044,022

IMPORTS OF JELUTONG BY CUSTOMS DISTRICTS (DUTIABLE).

At—	Pounds.	Value.
New York	4,771,218	$263,764
San Francisco	2,172,446	82,198
Washington	2,503,317	115,004
Ohio	547,590	40,484
Totals	9,994,571	$501,450

REEXPORTS OF JELUTONG.

To—	Pounds.	Value.
Canada	72,255	$9,619

BALATA.

IMPORTS OF BALATA BY COUNTRIES (FREE).

From—	Pounds.	Value.
NORTH AMERICA—		
Costa Rica	2,597	$1,352
Panama	976,357	397,293
West Indies—		
Trinidad and Tobago	40,443	26,255
Other British	3,566	2,781
Totals, North America	1,022,963	$427,681
SOUTH AMERICA—		
Brazil	639	$122
Colombia	495,468	213,828
Ecuador	3,150	1,490
Guiana—		
British	236,286	184,202
Dutch	362,544	272,727
Venezuela	328,831	178,560
Totals, South America	1,426,918	$850,929
Totals, 1917-18	2,449,881	1,278,610
Totals, 1916-17	3,287,443	1,649,452
Totals, 1915-16	2,544,405	996,102
Totals, 1914-15	2,472,224	963,384
Totals, 1913-14	1,533,024	793,126
Totals, 1912-13	1,318,598	766,772
Totals, 1911-12	1,517,066	984,012
Totals, 1910-11	878,305	624,702
Totals, 1909-10	399,003	196,878
Totals, 1908-09	1,157,018	522,872
Totals, 1907-08	584,582	276,756
Totals, 1906-07	799,029	305,041
Totals, 1905-06	374,220	152,689

IMPORTS OF BALATA BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	2,449,881	$1,278,610

REEXPORTS OF BALATA.

To—	Pounds.	Value.
UNITED KINGDOM—		
England	407,868	$254,777
Scotland	10,080	5,350
Canada	6,767	3,810
Chile	6,162	4,910
Japan	20,453	17,243
Australia	22,585	17,248
Totals, 1917-18	473,915	$303,338
Totals, 1916-17	879,765	474,538
Totals, 1915-16	667,168	245,329
Totals, 1914-15	1,076,619	426,735
Totals, 1913-14	223,983	127,139
Totals, 1912-13	118,334	77,963
Totals, 1911-12	62,529	38,423
Totals, 1910-11	264,589	235,575
Totals, 1909-10	.....	42,750
Totals, 1908-09	.....	223,907
Totals, 1907-08	.....	18,741
Totals, 1906-07	.....	12,659

RECLAIMED RUBBER.

EXPORTS OF RECLAIMED RUBBER BY COUNTRIES.

To—	Pounds.	Value.
EUROPE—		
France	227,806	$31,631
Italy	256,800	60,869
UNITED KINGDOM—		
England	40,134	10,496
Totals, Europe	524,740	$102,996
NORTH AMERICA—		
Canada	2,713,656	455,147
Costa Rica	500	104
Mexico	285	39
Cuba	24,727	5,673
Totals, North American	2,739,168	$460,963
ASIA—		
Japan	20,250	$3,211
British South Africa	800	108
Totals, 1917-18	3,284,953	$567,278
Totals, 1916-17	4,938,991	814,199
Totals, 1915-16	6,406,946	871,262
Totals, 1914-15	5,970,380	822,561
Totals, 1913-14	5,583,860	834,440
Totals, 1912-13	5,413,247	932,904
Totals, 1911-12	5,397,806	875,501
Totals, 1910-11	4,994,527	781,650
Totals, 1909-10	3,622,556	$35,795
Totals, 1908-09	3,196,551	414,861
Totals, 1907-08	2,947,974	418,738
Totals, 1906-07	4,550,788	665,109
Totals, 1905-06	4,084,696	511,843
Totals, 1904-05	a	522,902

(a) Not officially reported.

EXPORTS OF RECLAIMED RUBBER BY CUSTOMS DISTRICTS.

At—	Pounds.	Value.
New York	571,017	$112,092
El Paso	285	39
Buffalo	1,694,284	290,628
Dakota	2,300	376
Michigan	15,057	1,629
St. Lawrence	277,457	48,812
Vermont	724,558	113,902
Totals	3,284,958	$567,278

SUBSTITUTES, ELASTICON, ETC.

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER BY COUNTRIES (DUTIABLE).

From—	Value.
EUROPE—	
England	$1,360
NORTH AMERICA—	
Canada	$8
ASIA—	
Straits Settlements	$128,329
Dutch East Indies	6,064
Japan	677
Total, Asia	$135,070
Total, 1917-18	$136,438
Total, 1916-17	39,815
Total, 1915-16	16,179
Total, 1914-15	30,349
Total, 1913-14	87,642
Total, 1912-13	97,452
Total, 1911-12	87,328
Total, 1910-11	115,601
Total, 1909-10	114,516
Total, 1908-09	60,625
Total, 1907-08	27,000

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY CUSTOMS DISTRICTS (DUTIABLE).

At—	Value.
Massachusetts	$1,360
New York	97,364
Alaska	8
Washington	37,706
Total	$136,438

REEXPORTS OF ELASTICON AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY COUNTRIES.

From—	Value.
Canada	$11,012
Mexico	35
French Oceania	51
Total, 1917-18	$11,698

SCRAP RUBBER.

IMPORTS OF SCRAP RUBBER BY COUNTRIES (FREE).

To—	Pounds.	Value.
EUROPE—		
France	1,461,772	$110,581
Italy	246,526	63,119
Norway	66,783	6,166
United Kingdom—		
England	7,902,964	595,611
Scotland	20,160	1,411
Totals, Europe	9,698,205	$776,888
NORTH AMERICA—		
Canada	1,973,212	$128,252
Central America—		
Costa Rica	200	14
Panama	60,050	3,403
Mexico	98,567	3,806
Newfoundland and Labrador	55,514	4,039
West Indies—		
Jamaica	22,460	1,593
Trinidad and Tobago	6,543	361
Other British	2,594	199
Cuba	482,798	29,430
Dominican Republic	1,842	105
Totals, North America	2,703,780	$171,262
SOUTH AMERICA—		
Argentina	628,864	$40,823
Brazil	789,236	22,627
Colombia	3,422	115
Venezuela	3,759	470
Totals, South America	1,425,281	$64,035
ASIA—		
China	46,661	$2,666
OCEANIA—		
Australia	41,264	2,051
New Zealand	63,825	2,298
Totals, Oceania	105,089	$4,349
British West Africa	1,287	$82
Totals, 1917-18	13,980,303	$1,019,222
Totals, 1916-17	20,517,328	1,569,448
Totals, 1915-16	16,371,573	1,271,903
Totals, 1914-15	11,006,928	726,914
Totals, 1913-14	25,958,261	2,063,198
Totals, 1912-13	43,385,456	3,709,238
Totals, 1911-12	26,293,192	2,095,605
Totals, 1910-11	26,948,000	2,334,870
Totals, 1909-10	37,364,671	2,998,697
Totals, 1908-09	20,497,695	1,543,267
Totals, 1907-08	16,331,035	1,496,822
Totals, 1906-07	29,335,193	2,607,987

IMPORTS OF SCRAP RUBBER BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
Maine and New Hampshire	124,150	$15,145
Maryland	203 961	33.630
Massachusetts	319,143	17,689
New York	11,211,940	810,227
Philadelphia	67,440	13,616
Galveston	54,300	1,531
Arizona	1,687	51
El Paso	522	21
San Francisco	84,619	3,629
Southern California	1,832	40
Washington	47	19
Buffalo	530,646	42,048
Chicago	358,229	26,156
Dakota	178,452	7,835
Duluth and Superior	14,000	56
Michigan	204.082	7,761
Ohio	130,022	16,266
Rochester	30,000	2,850
St. Lawrence	212,282	13,804
Vermont	252,949	6,848
Totals	13,980,303	$1,019 222

EXPORTS OF SCRAP RUBBER BY COUNTRIES.

To—	Pounds.	Value.
EUROPE—		
France	141,990	$39 191
England	3.143	820
Scotland	19,183	1,918
Totals, Europe	164,316	$41,929
NORTH AMERICA—		
Canada	1,951,976	$193,827
Mexico	178	27
Totals, North America	1,952,154	$193,854
ASIA—		
China	787	$28
Totals, 1917-18	2,117,257	$235,811
Totals, 1916-17	3,696,661	415,526
Totals, 1915-16	3,904,715	400,148
Totals, 1914-15	2,422,091	291,421
Totals, 1913-14	6,207,672	598,287
Totals, 1912-13	7,269,465	880,442
Totals, 1911-12	7,336,984	780,188
Totals, 1910-11	7,049,729	723,664
Totals, 1909-10	6,143,610	578,944
Totals, 1908-09	4,071,795	402,897
Totals, 1907-08	4,255,789	449,727
Totals, 1906-07	4,756,621	548,695

EXPORTS OF SCRAP RUBBER BY CUSTOMS DISTRICTS.

At—	Pounds.	Value.
Massachusetts	28,072	$12,730
New York	136 422	29,226
San Francisco	787	28
Buffalo	786,225	106,452
Dakota	3 675	360
Michigan	288,965	34,357
St. Lawrence	559,794	28.113
Vermont	313,317	24.545
Totals	2,117 257	$235,811

REEXPORTS OF SCRAP RUBBER.

To—	Pounds.	Value.
Canada	74,277	$16,905
Argentina	220	60
Totals, 1917-18	74 497	$16,965
Totals, 1916-17	1,626	215
Totals, 1915-16	9,204	734
Totals, 1914-15	3,483	373
Totals, 1913-14	24,295	2,450
Totals, 1912-13	87,930	10,723
Totals, 1911-12	302,105	28,196
Totals, 1910-11	401,231	43,338
Totals, 1909-10	61,395	5,373
Totals, 1908-09	38,506	2,093
Totals, 1907-08	21,713	2,943
Totals, 1906-07	105,463	9.444

Note.—Details of exports of domestic merchandise by countries for the fiscal year ended June 30, 1918, were given on pages 167-168 of THE INDIA RUBBER WORLD, December 1, 1918.

SUMMARY.

IMPORTS OF FOREIGN MERCHANDISE.

	1915-16.		1916-17.		1917-18.	
UNMANUFACTURED—*free:*						
India rubber, etc., and substitutes for, and manufactures of:	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Balata	2,544,405	$996,102	3,287,156	$1,649,452	2,449.881	.....
Guayule	2,816,068	880,813	2,854,372	764,484	4,307,539	$1,341,095
[1]Jelutong	27,858,335	1,322,262	23,376 389	1,044,022	7,481,292	474,366
Gutta percha	3,188,449	342.226	2,021.794	332,223	1,151,312	147,323
India rubber	267,775,557	155,044,790	333,373,711	189,328.674	389,599 015	202,800,392
India rubber scrap, fit only for manufacture	16,371,573	1,271,903	20,517,328	1,569,448	15,980,303	1,019,222
Total unmanufactured imports	320,554,387	$159,858,096	385,430,750	$194,688,303	12,969,342	205,782,398
MANUFACTURED—*dutiable:*						
Gutta percha	.....	$57,873	.....	$173,975	.....	$16,978
India rubber	.....	398,370	.....	608.954	.....	599,763
Substitutes, elasticon and similar	.....	16.179	.....	39,815	.....	136,438
Total manufactured imports	.....	$472,074	.....	$822,744	.....	$753,179

REEXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—						
India rubber, etc., and substitutes for, and manufactures of:						
Balata	667,168	$245,329	879,765	$474,538	473,915	$303,338
Guayule	18,500	7,770	.....	.....	17,723	5,231
Jelutong	58,773	2,825	.....	.....	72,255	9,619
Gutta percha	60,023	11,446	763	558	202,646	47,211
India rubber	4,662,889	2 661.301	12,355,898	7,304,820	8,208,280	4,274,543
India rubber scrap or refuse, fit only for manufacture	9 204	734	1,626	215	74,497	16,965
Total unmanufactured re-exports	5,470,557	$2,929,405	13,238,052	$7,780,131	9,049,316	$4,656,907
MANUFACTURED—						
Gutta percha	.....	$537	.....	$421	.....	$18,216
India rubber	.....	38.649	.....	10,905	.....	13,563
Substitutes, elasticon and similar	.....	.....	.....	.....	.....	11,098
Total manufactures re-exported	.....	$39,186	.....	$11,326	.....	$42,877
		$409,148	3,696,661	$415,526	2,117,257	$235,811

EXPORTS OF DOMESTIC MANUFACTURES.

MANUFACTURED—						
India rubber:						
Scrap	3,904,715					
Reclaimed	6,406,946	871,262	4.938,991	814,199	3,284,958	567,278
Belting, hose and packing	.....	2,986,953	.....	3,532,384	.....	4,578,396
Boots and shoes—						
Boots (*pairs*)	720,130	1,619,260	600,455	1,483,379	1,559,598	4,861,213
Shoes (*pairs*)	1,976,696	1,046.102	3,356,484	1,716,225	1,244,170	913,128
Tires—						
For automobiles	.....	17,936,227	.....	12,330,201	.....	13,977,671
All other	.....	3,003.077	.....	2,547,652	.....	1,130,623
All other manufacturers of	.....	7.290,345	.....	8,265,509	.....	6,194,816
Total domestic manufactures exported	.....	$35,180,096	.....	$31,105,075	.....	$32,458,936

[1] Dutiable during 1916-17.

RUBBER STATISTICS FOR THE DOMINION OF CANADA

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

February.

	1918.		1919.	
UNMANUFACTURED—*free:*	Pounds.	Value.	Pounds.	Value.
Rubber, gutta percha, etc.:				
From United Kingdom	4,441	$2,458	2,219	$1,168
United States	677,798	328,372	207,705	81,646
Straits Settlements	265,448	132,330	997,881	363,643
Other countries	134,315	102,314	380,602	179,950
Totals	1,082,002	$565,474	1,588,407	$626,407
Rubber, recovered	254,186	44,341	181,281	35,134
Hard rubber sheets and rods	3,461	2,480	2,109	1,911
Rubber, powdered, and rubber or gutta percha scrap	153,793	9,282	467,989	48,254
Rubber thread, not covered	1,094	1,612	2,334	3,474
Rubber substitute	16,065	3,108	185,404	18,946
Totals	428,599	$60,823	839,117	$107,719
Balata, crude	.....	.....	7	10
Chicle	158,905	65,184	41,841	29,525
MANUFACTURED—*dutiable:*				
Boots and shoes	.....	$20,633	.....	13,098
Belting, hose and packing	.....	21,258	.....	27,138
Waterproofed clothing	.....	24,638	.....	23,965
Tires	.....	24,889	.....	53,998
Other manufactures	.....	79,413	.....	165,199
Totals	.....	$170,831	.....	$283,398

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

February.

	1919.		1918.	
MANUFACTURED—	Produce of Canada. Value.	Reexports of Foreign Goods. Value.	Produce of Canada. Value.	Reexports of Foreign Goods. Value.
Hose	$10,059	.....	$8,216	.....
Boots and shoes	23,990	.....	115,874	.....
Clothing	.....	.....	1,842	.....
Tires	121,968	$2,058	634,284	$4,379
Waste	8,069	.....	41,319	.....
Belting	3,320	.....	765	.....
All other—n. o. p.	5,380	2,206	68,108	333,754
Totals	$172,786	$4,264	$870,408	$338,133
Chicle	134,205	.....	71,450	.....

RUBBER IMPORTS AND EXPORTS FOR BRAZIL—1913 AND 1917.

IMPORTS.

	1913.		1917.	
MANUFACTURED—	Tons.	Value.	Tons.	Value.
Boots and shoes:				
From United States	.....	$52,000	20	$34,000
United Kingdom	.....	2,000	.....	.....
Germany	.....	5,000	.....	.....
Other countries	.....	4,000	.....	.....
Totals	.....	$63,000	20	$34,000
Tires and tubes:				
From United States	11	$24,000	324	$654,000
United Kingdom	39	63,000	34	61,000
Germany	111	161,000	.....	.....
Other countries	370	498,000	156	203,000
Totals	531	$746,000	514	$918,000
Sheets:				
From United States	1	$2,000	33	$41,000
United Kingdom	15	18,000	4	6,000
Germany	14	12,000	.....	.....
Other countries	6	7,000	1	1,000
Totals	36	$39,000	38	48,000
Hose:				
From United States	31	$22,000	107	$94,000
United Kingdom	22	26,000	13	16,000
Germany	49	52,000	.....	.....
Other countries	4	8,000	5	7,000
Totals	106	$108,000	125	$117,000
Solid rubber tires:				
From United States	.....	.....	62	$55,000
United Kingdom	5	$6,000	65	50,000
Germany	154	117,000	.....	.....
Other countries	5	6,000	1	1,000
Totals	164	$129,000	128	$106,000
Insulated wire:				
From United States	754	$208,000	389	$357,000
United Kingdom	37	20,000	1	2,000
Germany	174	84,000	.....	.....
Other countries	82	22,000	8	8,000
Totals	1,047	$434,000	398	$367,000
Electric cables:				
From United States	488	$163,000	1,036	$745,000
United Kingdom	1,250	408,000	37	19,000
Germany	580	167,000	.....	.....
Other countries	260	85,000	150	91,000
Totals	2,378	$823,000	2,223	$855,000
Other manufactures:				
From United States	44	$80,000	109	$234,000
United Kingdom	107	238,000	26	96,000
Germany	129	195,000	.....	.....
Other countries	72	177,000	43	148,000
Totals	352	$690,000	178	$478,000

EXPORTS.

MANUFACTURED—				
Rubber goods:				
To United States	.....	.....	1	$2,000
UNMANUFACTURED—				
India rubber (*Hevea*):				
To United States	16,507	$21,805,000	20,165	$20,674,000
United Kingdom	13,836	20,587,000	10,902	13,759,000
Germany	686	930,000	.....	.....
Other countries	3,406	5,399,000	522	780,000
Totals	34,435	$48,721,000	31,589	$35,113,000
Mangabeira—				
To United States	17	$11,000	138	$99,000
United Kingdom	84	61,000	29	15,000
Germany	85	80,000	.....	.....
Other countries	40	27,000	147	100,000
Totals	226	$179,000	314	$214,000
Manicoba—				
To United States	283	$259,000	1,209	$847,000
United Kingdom	638	667,000	508	366,000
Germany	233	231,000	.....	.....
Other countries	401	356,000	372	251,000
Totals	1,555	$1,513,000	2,089	$1,464,000

LONDON AND LIVERPOOL RUBBER STATISTICS.

EXPORTS.

March.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
Waste and reclaimed rubber:				
From London:				
To Belgium	.....	.....	4,500	£187
France	.....	.....	83,100	2,173
Spain	.....	.....	265,000	4,512
United States (Atlantic)	.....	.....	83,100	1,355
New South Wales	.....	.....	4,300	179
Totals	650,600	£13,478	240,000	£8,406
From Liverpool:				
To Belgium	.....	.....	39,400	1,646
France	.....	.....	44,800	1,960
Italy	.....	.....	160,800	5,025
Japan	.....	.....	15,800	687
United States	.....	.....	9,400	137
Canada	.....	.....	6,800	152
Totals	136,300	£4,454	277,000	£9,607
From Dover to France	.....	.....	600	20
From Manchester:				
To France	.....	.....	38,800	1,166
United States	.....	.....	34,300	435
Totals	.....	.....	73,100	£1,601

[1]The imports for March were printed on page 464 of the INDIA RUBBER WORLD, May 1, 1918.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE anticipations of the dealers, noted a month ago, that the scrap rubber trade would soon develop signs of improvement, have not been realized. Conditions are practically stagnant as regards the demand for scrap by the reclaimers, who decline to buy except for actual needs and are not paying the prices demanded except for shoes. The dullness of crude rubber apparently has more influence on the scrap market than has the supply of scrap. Some dealers are turning to the business of selecting repairable tires for selling to tire rebuilding plants and pulling tire fabric for the repair trade.

BOOTS AND SHOES. The movement has been very slow. Prices have held firm.

INNER TUBES. The market has been practically inactive.

MECHANICALS. Very little demand. Prices nominal.

TIRES. The demand is very slight, at about 4 cents.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

MAY 24, 1919

Prices subject to change without notice.

BOOTS AND SHOES:			
Arctic tops	*lb.*	.01¼ @	.01½
Boots and shoes	*lb.*	.07¾ @	.08
Trimmed arctics	*lb.*	.06¼ @	.06½
Untrimmed arctics	*lb.*	.05¼ @	.05½

HARD RUBBER:			
Battery jars, black compound	lb.	.01 @	
No. 1, bright fracture	lb.	.24 @	.25
INNER TUBES:			
No. 1, old packing	lb.	.20 @	.21
new packing	lb.	.24 @	.25
No. 2	lb.	.10½ @	.10¾
Red	lb.	.10½ @	.10¾
MECHANICALS:			
Black scrap, mixed, No. 1	lb.	.04¼ @	.04½
No. 2	lb.	.03½ @	.03¾
Car springs	lb.	.04¼ @	.04½
Heels	lb.	.03¼ @	.03½
Horse-shoe pads	lb.	.03¾ @	.04
Hose, air-brake	lb.	.04½ @	.04¾
fire, cotton lined	lb.	.01¾ @	.02
garden	lb.	.01½ @	.01¾
Insulated wire stripping, free from fiber	lb.	.03½ @	.04
Matting	lb.	.03½ @	.04
Packing	lb.	.01½ @	
Red scrap, No. 1	lb.	.01½ @	
No. 2	lb.	.09¼ @	.10
White scrap, No. 1	lb.	.06¾	.07
No. 2	lb.	.09¼ @	.09¾
TIRES, PNEUMATIC:			
PNEUMATIC:			
Auto peelings, No. 1	lb.	.09¾ @	.10¼
No. 2	lb.	.06 @	.06½
Bicycle	lb.	.04¼ @	.04½
Standard white auto	lb.	.05½ @	.05½
Standard mixed auto	lb.	.03¾ @	.04
Stripped, unguaranteed	lb.	.03¼ @	.03½
White, G. & G., M. & W., and U. S.	lb.	.05¼ @	.05½
SOLID:			
Carriage	lb.	.04¼ @	.04½
Pony	lb.	.01¼ @	.01½
Truck	lb.	.04¼ @	.04½

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

THE American staple market has been quite active and prices have advanced, due to a general demand both here and abroad. On April 17, middling spot was 28.65 cents and July deliveries, 25.80 cents. May 20, the spot quotation was 31.75 cents and July deliveries, 29.68 cents. These figures show an approximate advance in future cotton of $20 a bale.

Tentative estimates point to a reduction of 11.2 per cent in this year's cotton acreage. Rains and cool weather have prevented planting and plowing, and labor is scarce, hence the season is about 10 days late. The prospects, however, are better than a year ago and unless heavy replanting becomes necessary, a good yield seems assured.

Egyptian prices are unchanged. It is reported that the Cotton Control Commission in Egypt will go out of existence on July 31. It is also understood that trading in Egyptian futures will be resumed in Liverpool beginning June 2. Present quotations are 50 cents c. i. f. Boston for a medium grade of Sakel and 45 cents c. i. f. Boston for a medium grade of uppers.

SEA ISLAND COTTON.—John Malloch & Co. report a better demand during the month and prices have advanced. Prices are very strong, 57 cents being quoted for average extra choice. There is not a great deal of desirable cotton left in the South and such as there is appears to be in very strong hands. The outlook for the present crop as regards acreage is a little better than was anticipated a month ago and should everything go well the crop would make about 50,000 rather than 30,000, which was the earliest estimate. However, to offset the increased acreage, there are reports of weevil which is very unusual at this early stage of the crop. If these reports are true, it is doubtful if 50,000 bales or anywhere near it can be made.

COTTON FABRICS.—The general demand has been good in all lines and prices have been substantially advanced. The mills are confronted with increasing cost of raw materials and labor is high and scarce, all of which accounts for the inclination on the part of cotton goods manufacturers to withdraw from the market.

NEW YORK QUOTATIONS.

MAY 24, 1919.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	lb.	.85 @	
2¼ lbs. sq. yd., brass or copper insertion	lb.	.90 @	
BURLAPS:			
32—7-ounce	100 yards		@
32—8-ounce			@
40—7½-ounce		10.15	@
40—8-ounce		10.25	@
40—10-ounce		11.50	@
40—10½-ounce			@
45—7½-ounce		10.50	@
45—8-ounce		10.75	@
45—9½-ounce			@
48—10-ounce		15.50	@
DRILLS:			
38-inch 2.00-yard	yard	.29 @	
40-inch 2.47-yard		.23½ @	
52-inch 1.90-yard		.32¾ @	
52-inch 1.95-yard		.31⅞ @	
60-inch 1.52-yard		.40⅞ @	
DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	yard	.29 @	
38-inch 1.74-yard		.32⅞ @	
72-inch 16.66-ounce		.60⅜ @	
72-inch 17.21-ounce		.62⅜ @	
MECHANICAL:			
Hose	pound	*.62¼ @	
40-inch, 10-ounce		*.64¼ @	
Belting		*.62¼ @	
HOLLANDS, 40-INCH:			
Acme	yard	.23 @	
Endurance	yard	.27½ @	
Penn	yard	.30 @	
OSNABURGS:			
40-inch 2.35-yard	yard	.24⅛ @	
40-inch 2.48-yard		.23 @	
37½-inch 2.42-yard		.23⅝ @	
RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60 water-repellent	yard	.17 @	
60 x 48 not water-repellent		.16 @	
Cashmeres, cotton and wool, 36-inch, tan		.77½ @	
cotton, blue and black	yard	.90 @	
Oxford		.75 @	
Twills 64 x 72		.30 @	.32½
64 x 102		.35 @	.40
Twill, mercerized, 36-inch, tan and olive		.32½ @	
blue and black		.34½ @	
Tweed		.55 @	.72
printed		.16 @	.22

AVERAGE POUND PRICES FOR EGYPTIAN AND SEA ISLAND TIRE-BUILDING FABRICS, 1913 TO 1918.

17¼-Ounce Combed Sea Island:	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1913	.60	.59½	.58	.56¾	.54¾	.54	.53¾	.54	.52½	.55	.54	.53
1914	.52	.53¼	.54½	.54½	.54¾	.54¼	.54	.54	.52	.48¼	.46¾	.47¼
1915	.49	.49	.49½	.53	.59¾	.59½	.59½	.56¾	.54¼	.63	.61¾	.64
1916	...	...	...	.75	...	...	...	...	.75	...	...	...
1917	...	1.06	1.09	...	...	...	...	...	1.50	1.48	1.50	1.56
1918	...	1.60	1.60	...	...	...	1.60	...	...	1.77	...	...
17¼-Ounce Carded Egyptian:												
1913	.50¼	.50	.49¾	.45	.49⅛	.49	.49½	.49¼	.48½	.49	.48½	.47½
1914	.47	.47⅛	.46¼	.47	.45¾	.45¼	.46¼	.45¾	.45½	.41¼	.38¼	.38¼
1915	.38	.37¼	.37¼	.41¼	.42¾	.42½	.42½	.42	.46½	.51½	.52	.53½
1916	...	.58	...	...	...	...	.58	...	...	...	.75	.84
1917	...	.86	.89	...	...	...	...	...	...	...	1.15	...
1918	...	1.30	...	1.34	...	...	1.37	...	...	...	...	...

Plaids 60 x 48	.16½	@	
56 x 44	.15½	@	
Repp	.38½	@	.45
Surface prints 60 x 48	.17½	@	
64 x 60	.18½	@	
IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING —PLAIN AND FANCIES:			
63-inch, 3¼ to 7½ ounces, yard	1.15	@	3.15
36-inch, 2¾ to 5 ounces	.70	@	1.80
IMPORTED PLAID LINING (UNION AND COTTON):			
63-inch, 2 to 4 ounces, yard	.85	@	1.75
36-inch, 2 to 4 ounces	.50	@	1.00
DOMESTIC WORSTED FABRICS:			
36-inch, 4½ to 8 ounces, yard	.55	@	1.15
DOMESTIC WOVEN PLAID LININGS (COTTON):			
36-inch, 3¼ to 5 ounces, yard	.17	@	.30
SHEETINGS:			
JACKET:			
Delaware, yard	.23	@	
Schuylkill, yard	.26	@	
SILKS:			
Canton, 38-inch, yard	.38	@	
Schappe, 36-inch	.55	@	
TIRE FABRICS:			
17¼-ounce Sea Island, combed, pound	1.45	@	
17¼-ounce Egyptian, combed	1.25	@	
17¼-ounce Egyptian, carded	1.20	@	
17¼-ounce Peelers, combed	1.15	@	
17¼-ounce Peelers, carded	.85	@	

*Nominal.

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE MARKETS for the base metals, pig lead and spelter, have been very dull for the most part during the past month. A considerable decline in values took place in both pig lead and spelter, the prices regaining firmness and an upward tendency toward the middle of May.

ANILINE. There was a good volume of trade early in the month followed by lessened demand and a tendency to lower the price, which reached 21 cents per gallon.

DRY COLORS. The market for dry colors remains dull and prices unchanged. Manufacturers are optimistic, however, looking for improved demand.

BARYTES. The demand showed some improvement followed by steady domestic and good export demand. The price remained practically fixed.

BENZOL. The demand throughout the past month has been good at about 22 cents per gallon.

CARBON TETRACHLORIDE. The demand has been small and prices weak, falling to 12 cents per pound.

LITHOPONE. The month's business has been satisfactory with continuing good demand. The price holding steady at 6½ cents for carload lots.

LITHARGE AND SUBLIMED LEAD. There has been no change in prices, and none is anticipated till the usual mid-year revision.

WHITING. There has been a good demand, with no scarcity of material, at a steady price level.

ZINC OXIDE. The demand has been active the entire month. Prices remain unchanged and are likely to remain so until the end of the quarter.

NEW YORK QUOTATIONS.

MAY 24, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.				
Accelerator N. C., lb.	.50	@		
Accelerene, lb.	3.70	@		
Accelemal, lb.	.55	@		
Aldehyde ammonia crystals, lb.	1.00	@	1.25	
Aniline oil, lb.	.23	@		
Excellerex, lb.	*.85	@		
Hexamethylene tetramine (powdered), lb.	.95	@	1.10	
Paraphenylenediamine, lb.	3.50	@		
Tensolite, lb.	*.50	@		
Thiocarbanilide, lb.	*.50	@	.60	
Velocite, lb.	*.60	@		
ACCELERATORS, INORGANIC.				
Lead, dry red (bbls.), lb.	.10¼	@		
sublimed blue (bbls.), lb.	.08¼	@		
sublimed white (bbls.), lb.	.08¼	@		
white, basic carbonate (bbls.), lb.	.09	@		
Lead, oleate, lb.	*.27	@		
Lime, flour, lb.	.02	@	.02½	
Litharge, domestic, lb.	.09¼	@		
imported, lb.	.14	@	.15	
sublimed, lb.	.09¼	@		
Magnesium, carbonate, lb.	.11½	@		
calcined heavy (Thistle), lb.	.11	@		
light (Manhattan), lb.	.35	@		
Magnesium oxide, lb.	.22	@		
Magnesite, lb.	.04	@		
ACIDS.				
Acetic, 28 per cent (bbls.), cwt.	3.25	@		
Cresylic (97% straw color), gal.	1.02	@	1.07	
(95% dark), gal.	.92	@	.97	
Glacial, 99 per cent (carboys), cwt.	13.50	@		
Muriatic, 20 degrees, cwt.	1.60	@	1.90	
Nitric, 36 degrees, cwt.	6.10	@		
Sulphuric, 66 degrees, cwt.	2.00	@		
ALKALIES.				
Caustic soda, 76 per cent (bbls.), lb.	.03½	@	.03½	
Soda ash (bbls.), lb.	.01½	@	.02	
COLORS.				
Black:				
Bone, powdered, lb.	.05	@		
granulated, lb.	.09	@		
Carbon, black (sacks, factory), lb.	.15	@	.25	
Drop, lb.	.05½	@	.15	
Ivory black, lb.	.16	@	.30	
Lampblack, lb.	.15	@	.45	
Oil soluble aniline, lb.	.40	@		
Rubber black, lb.	.07	@		

Blue:				
Cobalt	lb.	.25	@	.30
Prussian	lb.	.70	@	.80
Ultramarine	lb.	.18	@	.40
Brown:				
Iron oxide	lb.	.04	@	
Sienna, Italian, raw and burnt	lb.	.07	@	.15
Spanish	lb.	.04½	@	.05
Umber, Turkey, raw and burnt	lb.	.06½	@	.07
Vandyke	lb.	.02½	@	.03½
Green:				
Chrome, light	lb.	.35	@	.40
medium	lb.	.40	@	.50
dark	lb.	.50	@	.60
commercial	lb.	.08	@	.15
Oxide of chromium (casks)	lb.	.67½	@	
Red:				
Antimony, crimson, sulphuret of (casks)	lb.	.50	@	
crimson, "Mephisto" (casks)	lb.	*.55	@	
Antimony, golden sulphuret of (casks)	lb.	.25	@	
golden, "Mephisto" (casks)	lb.	*.28	@	
golden sulphuret (States)	lb.	.28	@	
red sulphuret (States)	lb.	.25	@	
vermillion sulphuret	lb.	.55	@	
Arsenic, red sulphide	lb.	.25	@	
Indian, pure bright	lb.	.08½	@	
Toludine toner	lb.	3.50	@	
Iron oxide, reduced grades	lb.	.12	@	
pure bright	lb.	.16	@	
Oil soluble aniline, red	lb.	1.80	@	
orange	lb.	1.25	@	
Oximony	lb.	.18	@	
Venetian	lb.	.02	@	.04½
Vermilion, English, pale, medium, dark	lb.	1.25	@	
White:				
Aluminum bronze, C. P. (cases)	lb.	.58	@	
superior	lb.	.61	@	
Lithopone, domestic	lb.	.06½	@	.06¾
Ponolith (carloads, factory)	lb.	.06½	@	
Rubber-makers' white	lb.	.06½	@	.06¾
Zinc oxide, Horsehead (less carload, factory):				
"XX red"	lb.	.09¼	@	
"Special"	lb.	.09¾	@	
French process, red seal	lb.	.09½	@	.09¾
green seal	lb.	.10½	@	
white seal	lb.	.11½	@	.11¾
(States)	lb.	.09	@	
Azo, ZZZ, lead free (less carload factory)	lb.	.09¼	@	
ZZ, under 5% leaded (less carload factory)	lb.	.08¾	@	
Z, 8-10% leaded (less carload factory)	lb.	.08¼	@	
Zinc sulphide	lb.	*.06½	@	.06¾
Yellow:				
Cadmium, sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chrome, light and medium	lb.	.26	@	.28
Ochre, domestic	lb.	.02	@	.03
imported	lb.	.05	@	.06
Oil soluble aniline	lb.	1.20	@	
Zinc chromate	lb.	.60	@	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	ton	26.60	@	28.00
(sacks factory)	ton	23.75	@	25.00
Aluminum oxide	lb.	*.18	@	
Ammonia carbonate, powdered	lb.	.14	@	.14½
Asbestine (carloads)	ton	23.00	@	25.00
Asbestos (bags)	ton	35.00	@	
Avoilas compound	lb.	.15	@	
Barium, carbonate, precipitated	ton	55.00	@	
sulphide, precipitated	lb.	.06½	@	
Barytes, pure white	ton	32.00	@	35.00
off color	ton	23.00	@	25.00
uniform floated	ton	33.00	@	35.00
Basofor	lb.	.03½	@	
Blanc fixe	lb.	.04½	@	
Bone ash	lb.	.06	@	
Chalk, precipitated, extra light	lb.	.05	@	.05½
precipitated, heavy	lb.	.04	@	.04½
China clay, domestic	lb.	.08½	@	.20
imported	lb.	.19	@	.23
Cork flour	lb.	.53	@	
Cotton linters, clean mill run, f. o. b. factory	lb.	.02½	@	
Fossil flour (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Diatomite	lb.	.03	@	
Glue, high grade	lb.	.35	@	.40
medium	lb.	.30	@	.35
low grade	lb.	.20	@	.25
Graphite, flake (400-pound bbl.)	lb.	.10	@	.25
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Mica, powdered	lb.	.04	@	.05½
Pumice stone, powdered (bbl.)	lb.	.05	@	.08
Pumice stone, powdered (bbl.)	lb.	.05	@	.08
Rotten stone, powdered	lb.	.02½	@	.04½
Rub-R-Glu	lb.	*.20	@	.25
Silex (silica)	ton	22.00	@	40.00
Soapstone, powdered, domestic	ton	25.00	@	100.00
Starch, powdered corn (carload, bbls.)	cwt.	5.74	@	
(carload, bags)	cwt.	5.52	@	
Talc, American	ton	20.00	@	40.00
Tripoli earth, powdered	lb.	.01½	@	
Tyre-lith	ton	80.00	@	
Whiting, Alba (carloads)	cwt.	.80	@	.90
commercial	cwt.	1.25	@	
gilders	cwt.	1.30	@	1.35
Paris, white, American	cwt.	1.50	@	1.75
English cliffstone	cwt.	1.75	@	2.75
Wood pulp, imported	lb.	.03½	@	
Wood flour, American	lb.	.01¾	@	

MINERAL RUBBER.

Gilsonite	ton	47.50	@	
Genasco (carloads factory)	ton	55.00	@	
(less carloads factory)	ton	57.00	@	
M. R.	ton	*65.00	@	
M. R. X.	ton	100.00	@	
Liquid rubber	lb.	*.15	@	
Pioneer, carload, factory	ton	50.00	@	
less carload, factory	ton	55.00	@	
Richmond	ton	77.00	@	
No. 64	ton	45.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	55.00
Refined Elaterite	ton	175.00	@	
Raven M. R.	ton	35.00	@	60.00
Rubpron (carloads, factory)	ton	50.00	@	
(less car, factory)	ton	60.00	@	
Walpole rubber flux (factory)	lb.	.05	@	

OILS.

Castor, No. 1, U. S. P.	lb.	.25	@	
No. 2, U. S. P.	lb.	.23	@	
No. 3, U. S. P.	lb.	.20	@	
Corn, crude (bbls.)	lb.	.21	@	
refined Argo	cwt.	23.81	@	
Cotton	lb.	.24	@	
Glycerine (98 per cent)	lb.	.19	@	
Glycerole	lb.	.15	@	
Linseed, raw (carloads)	gal.	1.60	@	
Linseed compound	gal.	.85	@	
Palm (Niger)	lb.	.17	@	
Peanut	gal.	1.80	@	
Petrolatum	lb.	.06½	@	
Petroleum grease	lb.	.04½	@	
Pine, steam distilled	gal.	.66	@	
Rapeseed, refined	gal.	1.50	@	
blown	gal.	1.60	@	
Rosin	gal.	.76	@	
Soya bean	lb.	.17	@	
Tar	gal.	.35	@	.38

RESINS AND PITCHES.

Cantella gum	lb.	.60	@	
Tar, retort	bbl.	13.50	@	
kiln	bbl.	12.50	@	
Pitch, Burgundy	lb.	*.07½	@	
coal tar	lb.	*.01	@	
pine tar	lb.	7.50	@	
ponto	lb.	*.14	@	
Resin, Pontianak, refined	lb.	None		
granulated	lb.	None		
fused	lb.	None		
Rosin, K.	bbl.	14.25	@	
powdered	lb.	*.17	@	
Shellac, fine orange	lb.	.80	@	
Tar, kiln	gal.	.25	@	
retort	gal.	.28	@	

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.16	@	
methyl (drums)	gal.	1.10	@	
Benzol, water white	gal.	.22	@	.27
Beta-naphthol, resublimed	lb.	1.00	@	
ordinary grade	lb.	.50	@	
Carbon bisulphide (drums)	lb.	.06½	@	
tetrachloride (drums)	lb.	.14	@	
Naphtha, motor gasoline (steel bbls.)	gal.	.24½	@	
73 @ 76 degrees (steel bbls.)	gal.	None		
68 @ 70 degrees (steel bbls.)	gal.	None		
Solvent	gal.	.20	@	
V. M. & P. (steel bbls.)	gal.	.23½	@	
Toluol, pure	gal.	.25	@	.30
Turpentine, spirits	gal.	.80	@	.81
wood	gal.	.65	@	.72
Osmaco reducer	gal.	.30	@	
Xylol, pure	gal.	.40	@	.45
commercial	gal.	.30	@	.35

SUBSTITUTES.

Black	lb.	.09	@	.18
White	lb.	.12	@	.23
Brown	lb.	.15	@	.23
Brown factice	lb.	.09	@	.22
White factice	lb.	.11	@	.23
Paragol soft and medium (carloads)	cwt.	17.08	@	
hard	cwt.	16.58	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.49	@	
Orange mineral, domestic	lb.	.13¼	@	
Sulphur chloride (drums)	lb.	.06½	@	.06¾
Sulphur, flour, Brooklyn brand (carloads)	cwt.	2.95	@	
pure soft (carloads)	cwt.	2.90	@	
superfine (carloads, factory)	cwt.	2.50	@	

(See also Colors—Antimony)

WAXES.

Wax, beeswax, white	lb.	.65	@	.70
ceresin, white	lb.	.15	@	.18
carnauba	lb.	.43	@	.80
ozokerite, black	lb.	.60	@	
green	lb.	.80	@	
montan	lb.	.32	@	.35
substitute	lb.	.22	@	.30
paraffine, refined 118/120 m. p. (cases)	lb.	.09¾	@	
123/125 m. p. (cases)	lb.	.09¾	@	
128/130 m. p. (cases)	lb.	.10¾	@	

*Nominal.

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA

Vol. 60. JUNE 1, 1919. No. 3.

TABLE OF CONTENTS.

Editorials:
Rubber Manufacturers' Opinions 469
The Coming Industrial Congress..... 469-470
Results of Government Ownership 470
Homes for Employes 470
Minor Editorial 470

Growing Cotton for Tire Fabrics..... Illustrated 471-472

Echoes of the Great War ..... Illustrated 473-474

An Investigation of German Ravages in Rubber Factories of Belgium and Northern France During the Great War. By a Special Correspondent Illustrated 475-477

The Goodyear Rubber Plantation..... Illustrated 478-479

Inquiries and Trade Opportunities..... 479

Giant Tires for Handley-Page Airplanes... Illustrated 480-481

Pneumatic Tires on Trucks..... Illustrated 481

Developments in Rubberized Unwoven Fabrics By Roland B. Respess..... Illustrated 482-483

Useful Hints for the Rubber Laboratory. By D. Repony. 483

Editor's Book Table 484
"Ceylon Agricultural Society Year Book." "Practical Exporting."

New Trade Publications 484

Chemistry:
What the Rubber Chemists Are Doing 485-487
Chemical Patents 487
Laboratory Apparatus ..... Illustrated 487

Machines and Appliances ..... Illustrated 488-489
The "Akron" Friction Clutch. The Pfaudler Utility Pot. Tasgon and Tar-Gon. Steel Tables and Dry Compound Bins. Kremer Tire-Building Machine. Non-Explosive Safety Cement Cans. A New Method of Extinguishing Fires. Portable Air Compressors for Tires.

Machinery Patents ..... Illustrated 489-490
Compressed Asbestos Sheet Packing. Chicle Gum-Straining Machine. Machine for Making Rubber Stock. Making Golf Balls. Other Machinery Patents.

Process Patents 490

New Goods and Specialties..... Illustrated 491-493
A Toy Monoplane That Soars. A Work-Shoe with Rubber Sole. An Automatic Inflating Valve. Detachable Rubber Heel. A Western Non-skid Tire. A Sponge-Rubber Tire Filler. A Rubber-Lined Case for Bottles. "Test Special" Rubber Belting. Novel Hot-Water Bottle That Folds. Regent Keds—A New Line of Summer Footwear. A "Minnow" Bait for Bass. A New Swimming Glove. Vacuum Cleaner with Rubber Belt. An Adjustable Cravat. A Weighted Rubber Sole. A Truck Tire That Withstands Strain. Black and White in Combination.

Activities of The Rubber Association of America, Inc. 494-497

Testing of Textile Materials..... Illustrated 497

S. A. E. Adopts Standards Recommended by Tire and Rim Divisions ..... Illustrated 498-499

Judicial Decisions 499

The Honorable Augustus O. Bourn. Portrait and Sketch 500

Interesting Letters from our Readers..... 500

American Rubber Trade—News Notes and Personals Illustrated 501-506

Dividends 501

Dr. Albert A. Somerville..... Portrait and Sketch 501

New Incorporations 502

Edward V. Peters ..... Portrait and Sketch 503

Herbert G. Clopper ..... Portrait and Sketch 503

Frederick W. Dunbar..... Portrait and Sketch 506

John Morgan ..... Portrait and Sketch 508

Ralph L. Fuller ..... Portrait and Sketch 508-509

Capt. Francis H. Appleton..... Portrait and Sketch 510

George D. Kratz ..... Portrait and Sketch 513

Canadian Consolidated Rubber Co., Limited, Report and Election 506

Obituary Record 513
John V. Alden. Augustus D. Juilliard.

Domestic Correspondence:
Ohio ..... By Our Correspondent—Illustrated 507-508
Massachusetts ..... By Our Correspondent 509
Pacific Coast ..... By Our Correspondent 510-511
New Jersey..By Our Correspondent—Illustrated 511-512
Rhode Island..... By Our Correspondent 512-513
Connecticut Notes 513

Foreign Rubber News:
Great Britain ..... By Our Correspondent 514-515
Miscellaneous Notes ..... Illustrated 515-517
Japan..... By Our Correspondent—Illustrated 516-517

Balata and Rubber Enterprises in the Guianas. By a Special Correspondent ..... Illustrated 518-519

Patents Relating to Rubber..... 520-521
United States, Canada, United Kingdom.

Trade Marks 521
United States, Canada, New Zealand.

Designs ..... Illustrated 521

Markets:
Crude Rubber 523
Chart Showing Fluctuations of the New York Crude Rubber Market 1911 to 1918..... 522
Chart Showing Fluctuations of the London Crude Rubber Market 1914 to 1918..... 522
Highest and Lowest Prices 523
Singapore Rubber Auctions 524
Reclaimed Rubber 523
Cotton and Other Fabrics 533-534
Average Pound Prices Tire Building Fabrics, 1913 to 1918 533
Chemicals and Ingredients 534-535
Rubber Scrap 532-533

Statistics:
Brazil, Exports from Manáos..... 524
Imports and Exports, 1913 and 1917..... 532
Canada Statistics for February..... 532
Ceylon Imports and Exports 524
Java, Plantation Rubber Exports..... 524
Malaya Exports of Plantation Rubber..... 524
Straits Settlements Rubber Exports..... 524
United Kingdom Statistics for February..... 527
London and Liverpool Statistics for March..... 532
United States:
Crude Rubber Arrivals at Atlantic and Pacific Ports as Stated by Ships' Manifests..... 524-527
Exports During March, 1919 (By Countries)... 528
Official India Rubber Statistics for the United States—Fiscal Year Ended June 30, 1918..... 529-531
Statistics for March 527